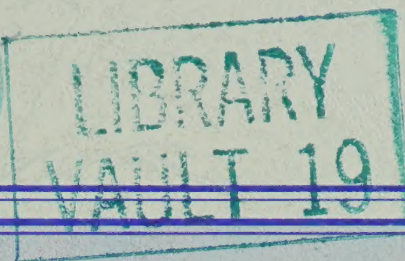
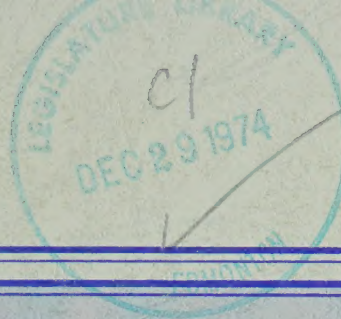


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OGCB REPORT 69-C



REPORT OF AN APPLICATION OF

ATLANTIC RICHFIELD COMPANY, CITIES SERVICE ATHABASCA, INC.
IMPERIAL OIL LIMITED AND ROYALITE OIL COMPANY, LIMITED

SEPTEMBER 1969

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ALBERTA OIL AND GAS CONSERVATION BOARD

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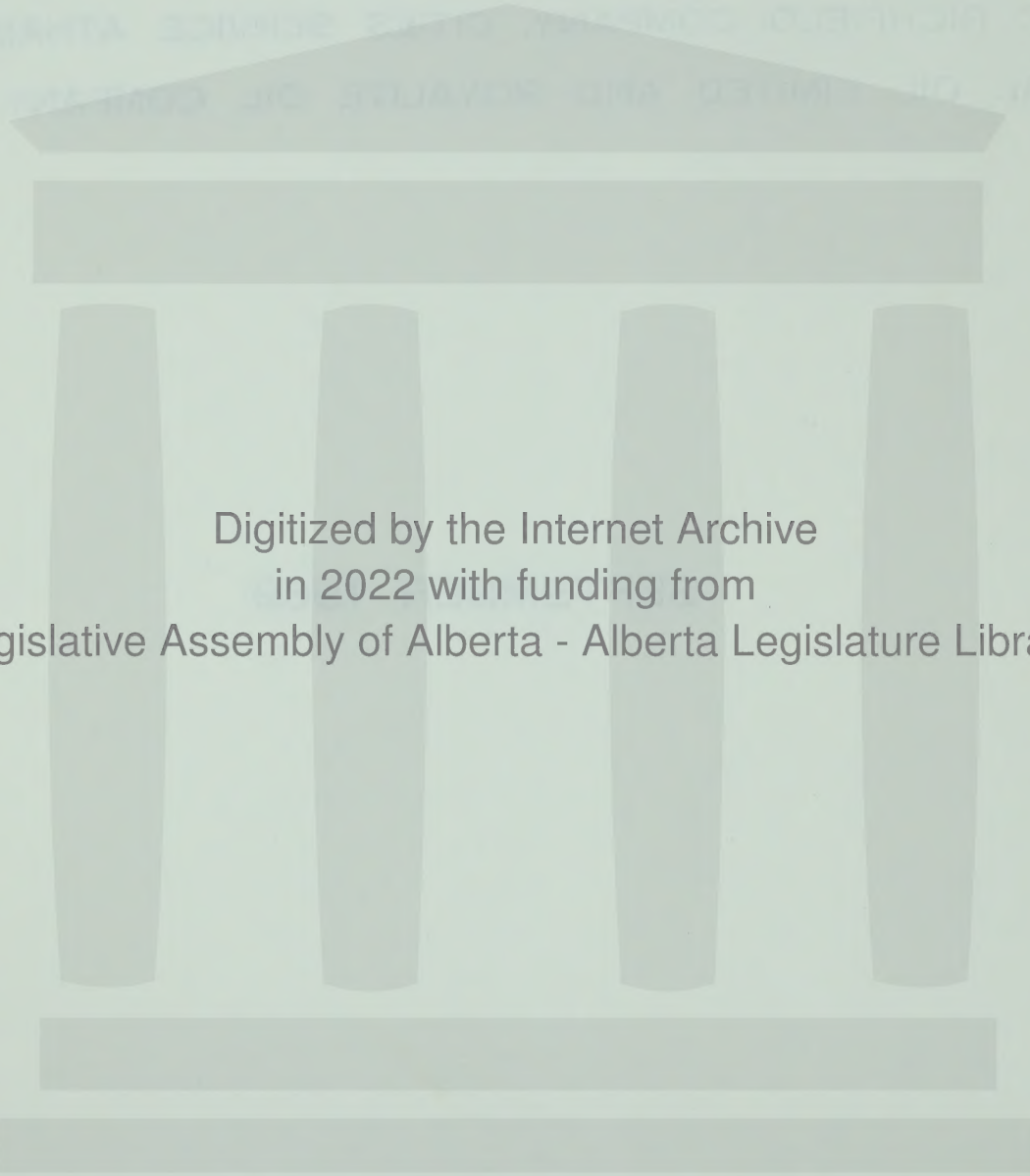
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I INTRODUCTION

This report deals with the amended application of Atlantic Richfield Company (formerly Richfield Oil Corporation), Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited for approval of a scheme or operation for the recovery of synthetic crude oil from oil sands in the bituminous sands area of Alberta. The application was heard by the Oil and Gas Conservation Board on May 26 and 27, 1969, with G. W. Govier, P. Eng., A. F. Manyluk, P. Eng. and Vernon Millard sitting.

The application was made under Part VIA of The Oil and Gas Conservation Act. This Part has been replaced by Part 8 of The Oil and Gas Conservation Act, 1969, unchanged in any way that would affect the application.

A description of the previous applications and a history of the developments leading up to the present application are outlined in Section II of this report.

The Application

The present application is an amended form of the earlier application considered by the Board at a hearing held in June and August, 1968. The applicants propose to produce 18,250,000 barrels per year of synthetic crude oil, 9,125,000 barrels per year of specialty oils and 1,825,000 barrels per year of attendant naptha from Lease 17 in Townships 92 and 93, Ranges 10, 11 and 12, West of the 4th Meridian in the bituminous sands area of Alberta. A minimum term of approval of 25 years is applied for

with production to commence not earlier than mid - 1976 and with sustained production at the proposed rate commencing in 1977. Details of the application are given in Section III of this report.

The Applicants

Participation in the proposed project is shared 30 per cent each by Atlantic Richfield Company, Cities Service Athabasca, Inc. and Imperial Oil Limited and 10 per cent by Royalite Oil Company Limited. Syncrude Canada Ltd. was incorporated in Alberta by the applicants in December 1964. It is a non-profit company formed for the purpose of carrying out research and commercial development of the Athabasca oil sands, and would be the operator for the applicants.

Atlantic Richfield Company is engaged in exploration and production operations in Canada with its parent company being a fully integrated oil company in the United States. Cities Service Athabasca, Inc. is a subsidiary of Cities Service Company which, through other subsidiaries, carries on exploration and production operations in Canada and which is an integrated oil company in the United States. Imperial Oil Limited and Royalite Oil Company, Limited, a subsidiary of Gulf Oil Canada Limited, are fully integrated oil companies operating in Canada.

Appearances

The persons named in Table I appeared at the hearing.

Great Plains Development Company of Canada, Ltd., Home Oil

Company Limited, Pan American Petroleum Corporation and Texaco Exploration Company appeared only for the purposes of cross-examination and argument.

TABLE I

APPENDICES

Abbreviation of Name Used in Report		Represented by	Witnesses
Syncrude Canada Ltd.	Syncrude) J. H. Laycraft, Q.C.)	F. K. Spragins, P.Eng. (of Syncrude)
Atlantic Richfield Company	Atlantic Richfield) ")	R. G. Daniel (of Atlantic Richfield)
Cities Service Athabasca, inc.	Cities Service) ")	W. F. Kieschnick, Jr. (of Atlantic Richfield)
Imperial Oil Limited	Imperial) ")	W. F. Thompson (of Atlantic Richfield)
Royalite Oil Company, Limited	Royalite) ")	
Chevron Standard Limited	Chevron	R. J. Gibbs R. R. Dutka, P.Eng.	A. B. Bristow, Jr., P.Eng. E. J. Cahill (of Standard Oil Company of California)
Banff Oil Ltd.	Banff	G. J. Last, P.Eng.	G. J. Last, P.Eng. (of Banff)
BP Exploration Canada Limited	BP Exploration	M. W. Clegg J. R. Lacey, P.Eng.	M. W. Clegg J. R. Lacey, P.Eng. (of Triad)
Dome Petroleum Limited	Dome	C. S. Dunkley, P.Eng.	C. S. Dunkley, P.Eng. J. C. Levesque (of Supplementary Land Services Limited)
Great Plains Development Company of Canada, Ltd.	Great Plains	P. Podmaroff, P.Eng.	

TABLE I (Continued)

Abbreciation of Name Used in Report	Represented by		<u>Witnesses</u>
Home Oil Company Limited	Home	M. P. Paulson, P.Eng.	
Mobil Oil Canada, Ltd.	Mobil	D. W. MacFarlane	B. H. Templeton (of Mobil Oil Corporation)
Pan American Petroleum Corporation	Pan American	P. Bladen	
Texaco Exploration Company	Texaco	W. S. Kolodinsky, P.Eng.	
Triad Oil Co. Ltd.	Triad	M. W. Clegg J. R. Lacey, P.Eng.	M. W. Clegg J. R. Lacey
Board Staff		G. C. Watkins D. N. Blades, P.Eng.	

II BACKGROUND TO THE APPLICATION AND DEFINITION OF ISSUES

Background

The present application constitutes the second amended version of one first received by the Board in 1962.

The initial application was for the production of 100,000 barrels per day of synthetic crude oil with production to commence in 1969. Following a hearing of the application in 1963 the Board, with the approval of the Lieutenant Governor in Council, deferred final consideration of it and stated the circumstances under which the Board would reconsider the application or an amended form of it. The details of the 1963 decision which was approved by the Lieutenant Governor in Council appear in the Board's report of October 1963⁽¹⁾.

The first amended form of the original application was filed on May 13, 1968, and heard at a public hearing in June and August of 1968. The first amended application was for 18,250,000 barrels per year of synthetic crude oil, 9,125,000 barrels per year of specialty oils and 1,825,000 barrels per year of attendant naphtha, with production commencing in 1973. The Board's initial decision of this 1968 application, was given in OGCB Report 68-C⁽²⁾. The Lieutenant Governor in Council did not approve the initial decision before the Board filed its Supplement to the Report referred to below. This initial decision was to the effect that, while

(1) Report to the Lieutenant Governor in Council with respect to the Applications of Cities Service Athabasca, Inc. and Shell Canada Limited. October, 1963.

(2) Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December, 1968.

the application could not then be approved, the Board would be prepared to grant the application, with the approval of the Lieutenant Governor in Council, if the applicants were able to satisfy the Board on certain matters at a further hearing to be called in November 1969. Because of its relationship to the present application the Board's December 1968 "Disposition of the Application" (Finding 6) is quoted in the following:

"Having regard to its present findings with respect to the applicants' marketing plan the Board concludes that the application cannot be approved at the present time. The barrier to immediate approval is the substantial uncertainty with respect to the probable magnitude and rate of development of the recent Alaskan discoveries. Since, in the Board's view, there is a fair possibility that these discoveries could result in a new United States supply of the order of the Board's high estimates of production from Alaska, the Board cannot now accept that the proposed "new within reach" markets would represent a net gain in market for Alberta oil.

"Nonetheless, the Board does not think it proper, on the basis of the possibilities with respect to Alaska which are most difficult to resolve now, and which constitute the only barrier to present approval, that the application be denied or that the entire decision be further delayed. The applicants' case reflects their conviction that the Alaskan discoveries will not result in additional supplies being developed which will significantly affect their forecast of the United States deficiencies. The Board believes that results of exploration activity currently underway and planned for the coming winter may permit a more meaningful evaluation of the prospects in Alaska to be made in a few months' time.

"The Board would be prepared, therefore, subject to the approval of the Lieutenant Governor in Council, to approve the application provided that:

During the month of November 1969 at a public hearing called for the purpose upon eight weeks' notice following the filing of the applicants' submission, the applicants

satisfy the Board that the balance of probabilities, as they may then be best assessed, strongly favours the applicants' contention that the probable Alaskan developments will be of the order of both those which they have forecast and which the Board has included in its low Alaska production case, and not such a degree greater as to reduce significantly the deficiencies now anticipated by the applicants in the United States indigenous supply of crude oil in the period 1973 to 1974.

"In the event that the applicants do not file a submission to be considered at a November 1969 hearing, on or before September 5, 1969, the application would be deemed to be dismissed."

Following release of the December 1968 Report and the initial decision of the Board therein, the applicants made a submission to the Lieutenant Governor in Council in which they outlined certain contentions and expressed willingness to delay the commencement of the proposed operations by three years. The submission of the applicants to the Lieutenant Governor in Council was quoted in full in Appendix B of a subsequent report⁽³⁾ of the Board. The Lieutenant Governor in Council referred this submission of the applicants to the Board for advice and in OGCB Report 69-B the Board in effect gave its advice by amending the initial (then unapproved) decision of December 1968. The "Amended Disposition of the Application" is quoted from Section IV of this last report in the following:

"The submission of the applicants to the Lieutenant Governor in Council raises no matters which cause the Board to revise the views, based upon the evidence submitted at the August 1968 hearing, which are expressed in the first paragraph of Finding 6 of OGCB Report 68-C, reproduced in Appendix A.

(3) OGCB Report 69-B. Supplement to the Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. March, 1969.

"The premises upon which the applicants' submission to the Lieutenant Governor in Council are based conflict with the second paragraph of Finding 6 of OGCB Report 68-6. These indicate that a more meaningful evaluation of the prospects in Alaska could not be expected from a hearing later in this year and that, in the light of the proposed new start-up date and new evidence regarding other matters that may be forthcoming if the hearing now proposed by the applicants is called, the possibilities with respect to Alaska may not be a barrier to the granting of the application.

"In the light of the present representations of the applicants to the Lieutenant Governor in Council regarding

- (a) their inability to provide definitive estimates of future Alaska production but their general acceptance of the Board's "high Alaska production" case,
- (b) their willingness to delay the start of commercial operations to a time some three years later than that originally applied for, and
- (c) the availability of new United States demand forecasts,

the Board believes it proper that the provisions under which it would be prepared, with the approval of the Lieutenant Governor in Council, to approve the application, be altered from those described in Finding 6 of OGCB Report 68-C to the following which supersedes all but the first paragraph of Finding 6 referred to:

"The Board would be prepared, subject to the approval of the Lieutenant Governor in Council, to grant the application provided that:

"At a public hearing called for the purpose upon eight weeks' notice following the filing with the Board of an appropriate submission from the applicants, the applicants satisfy the Board that the balance of probabilities as they may then best be assessed strongly favours the position that, having regard to

- (a) the probable Alaskan development,

- (b) the proposed amended date at which commercial operations would commence,
- (c) new evidence of the applicants and others relating to the United States demand,
- (d) any new evidence of the applicants and others relating to the production of oil in the United States elsewhere than in Alaska, and
- (e) any new evidence of the applicants and others relating to substantial changes in circumstances affecting the entry of Canadian oil in United States markets;

the deficiencies in the United States supply in the period 1976 to 1977 would be approximately what the applicants anticipated, at the August, 1968, hearing of the application, for the period 1973 to 1974.

"In the event that the applicants do not file a submission with the Board before September 5, 1969, the application would be deemed to be dismissed."

OGCB Report 69-B was tabled in the Legislative Assembly on March 6, 1969. The Lieutenant Governor in Council gave its approval by OC 429/69 to the December, 1968 disposition and March, 1969 amended disposition, thus completing matters with respect to the 1968 application.

In accordance with the terms of the March 1969 disposition the applicants then filed their second amendment to the 1963 application on March 24, 1969. This 1969 application was for approval for the production of 18,250,000 barrels per year of synthetic crude oil, 9,125,000 barrels per year of specialty oils, and 1,825,000 barrels per year of naphtha, with production to commence in mid-1976. This is the application now under consideration. The only significant change from the 1968

application is with respect to the proposed time of commencement of production (mid-1976 instead of 1973).

Definition of the Issues

The applications preceding the present one were fully considered from the viewpoint of conservation, and to the extent appropriate, from the viewpoints of technical feasibility, economic feasibility and financability. None of these matters requires further consideration and the Board's findings with respect to them in the 1968 application apply to the 1969 application. These findings are given in Report OGCB 68-C, and are repeated for convenience in Section X of this report.

The marketing plans of the applicants, which are affected as to timing by the 1969 amendment, remain as the only matter of concern and require appraisal under the intent and terms of the Oil Sands Development Policy of the Alberta Government. This policy and the Board's interpretation of it were both rather fully reviewed in Report OGCB 68-C and further detailed reviews seem unnecessary at this time. In brief the intent of the policy is "to so regulate oil sands production that it will supplement but not displace conventional oil" and to "ensure that the orderly development of the oil sands will proceed as rapidly as their production can be integrated into the overall economy of the Province". (The quotations are from the October 1962 Government Policy Statement with Respect to Oil Sands Development, reproduced in full as Appendix A, Part 1 of OGCB Report 68-C).

The guidelines indicated in the October 1962 policy statement for the administration of the policy were amended and enlarged upon in a February 1968 Government Policy Statement reproduced in full as Appendix A, Part 2 of OGCB Report 68-C. The guidelines having applicability to the present application relate to the marketing of oil sands products in "new within reach markets", other "within reach markets" and "beyond reach markets". These are discussed in detail in Report 68-C but are highlighted here for convenience.

"New Within Reach" Markets

The policy provides that a plan for the marketing of oil sands products in a market within reach of the conventional industry may be approved if it is a new market, that is one not being served to-day, one over and above the existing markets and one representing a net increase in total market. In such a case production of oil sands products at volumes equal to 50 per cent of the new market may be approved.

Other "Within Reach Markets"

The policy requires that before a marketing plan involving the marketing of oil sands products in within reach markets not qualifying as "new" be approved, the Board be satisfied that such marketing is indicated to be "desirable on the basis of the trend in the life-index of the conventional industry". Further the desirability of increased oil sands production is taken to be when the index is gradually declining and to ensure that it does not drop below 12 to 13 years.

"Beyond Reach Markets"

For oil sands products that will be marketed clearly beyond present or foreseeable reach of Alberta's conventional industry, the Oil Sands Development Policy provides no limitation on the rate of production if the development program meets the conservation and related requirements of the Board. "Beyond reach markets" include any markets, including specialty markets, which the conventional industry is not now serving nor can reasonably be expected to serve in the foreseeable future because of price, quality specification or other reasons.

Marketing Plans of the Applicants

The overall marketing plan of the applicants involves the marketing of 25,000 barrels per day of specialty oil in Ontario and the Great Lakes area of the United States, 5,000 barrels per day of naphtha in overseas or other "beyond reach" markets and 50,000 barrels per day of synthetic crude oil and 50,000 barrels per day of conventional crude oil in "new within reach" markets in the United States.

The Board did not find the marketing plan of the applicants for the 50,000 barrels per day of synthetic crude oil in the 1968 application to qualify either under the "New Within Reach" category for which they applied or under the Other "Within Reach" category. The Board's finding, set out in Finding 4(a) of OGCB Report 68-C, was:

"The market plans proposed by Atlantic Richfield, Cities Service and Imperial for their shares of the

synthetic crude oil and the matching conventional crude oil, are by no means fully defined and rest primarily upon general commitments made by the proposed United States purchasers. In the case of Royalite, the plan to sell its share of the synthetic and matching conventional crude oil to Gulf Oil Corporation for use in its Toledo refinery, is more specific but still dependent upon general commitments from the purchaser. However, recognizing the difficulties involved the Board is satisfied with the undertakings of the applicants, and that the markets would be ones not being served today and ones over and above normal market growth for Alberta oil in such market areas.

"As discussed in Section XII, whether the proposed markets would also qualify as representing net increases in markets for Canadian oil depends upon the removal of Government restrictions on the import of Canadian oil into the United States. In turn, the probability of the removal of these restrictions by or about the time the operations proposed by the applicants would start, is, in the Board's view, critically dependent upon the level of production which may then be expected from Alaska. Thus, whether or not the proposed markets would represent net increases in the markets for Alberta oil depends upon the magnitude and rate of development of the recent discoveries in Alaska. Should these developments be of the order of the low estimate of the Board, the Board believes the deficiencies in United States supply in the period 1973 to 1975 would be such that the proposed markets would represent net increases in markets and would qualify under the "new within reach" criterion of the Oil Sands Development Policy. Alternatively if the Alaska developments are more of the order of the high estimates of the Board the proposed markets would not now qualify."

In its study of the marketing plan for the synthetic crude oil, reported in Board Report 68-C, the Board concluded that the plan would have qualified if, on the balance of probabilities as they could best be assessed, the deficiencies in the United States supply were actually of the order estimated by the applicant in its 1968 application in the period 1973 to 1974. The statement

appears in the Board's Disposition Statement in Report 68-C quoted earlier on page 8.

In OGCB Report 69-B, dealing with the submission of the applicants to the Lieutenant Governor in Council and giving its amended disposition of the 1968 application, the Board again referred to the deficiencies earlier anticipated by the applicants in 1973 to 1974. The reference appears in the Amended Disposition Statement quoted on page 10.

In considering the present application the Board is therefore specifically interested in the level of United States deficiency in oil supply now estimated for the period 1976-1977 as compared with the level anticipated by the applicants in their 1968 application for the period 1973-74. Consistent with the method of appraisal used by the Board in OGCB 68-C, the Board is concerned not only with the indicated total deficiency and its trend in the period, but also with what the Board referred to as "the remaining import requirement", and its general trend. The Board also considers it proper that the marketing plan for the synthetic crude oil be reappraised in terms of the life index text which is applicable to within reach markets if they should not be deemed to be "new". Finally, since the estimated deficiency and life index figures can only be employed as guides to broad judgment, the Board must ask itself whether, on a balance of all probabilities, the marketing plan for the synthetic crude oil is within the overall intent of the Oil Sands Development Policy.

In its Amended Disposition of the 1968 application quoted earlier, pages 9 and 10, the Board spelled out the matters which it was prepared to review to determine whether the marketing plan of the application amended as to start-up date would qualify under the policy. The present issues are therefore whether, having regard to the matters spelled out on pages 9 and 10, the marketing plans for the synthetic crude oil

- (a) qualify under the "new within reach" criteria (which the Board has said they would if the forecast deficiencies in the United States supply of oil were of a certain level),
- (b) qualify under the life index criterion, and
- (c) qualify generally under the broad intent of the oil sands development policy.

In this report each of the matters (a) through (e) referred to on pages 9 and 10 are separately appraised and then the fundamental issues as expressed in clauses (a), (b) and (c) of the preceding paragraph are dealt with.

III SUBMISSION OF THE APPLICANTS

As discussed in Sections I and II the applicants in effect asked for reconsideration of their 1968 application subject to the basic amendment that the start of commercial operations be delayed from mid-1973 to mid-1976. The applicants' overall contention was that with the proposed delay in start-up, their projection of United States production and their new estimates of United States demand for oil, the marketing plan for the synthetic crude oil would meet the requirements of the Oil Sands Development Policy.

In this section the submission of the applicants is reviewed briefly with respect to the issues lettered (a) to (e) on pages 9 and 10 of Section II. More detailed discussion of each of the matters is deferred to Sections V to VII.

The Probable Alaskan Development

As they indicated in their submission to the Lieutenant Governor in Council, the applicants presented essentially no evidence concerning probable Alaskan developments. They stated that their range of estimates were "not seriously incompatible with the Board's 'High Alaska' case" as outlined in OGCB Report 68-C⁽¹⁾ and that they were, therefore, prepared to be judged on the basis of this estimate.

(1) OGCB Report 68-C. Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act.

The Proposed Amended Start-Up Time

The applicants proposed an elongation of their preparation schedule to reflect the three-year delay in start-up time from mid-1973 to mid-1976. The final piloting and evaluation studies were rescheduled to last about two years, including a process optimization program commencing at the appropriate time during this period. Clearing and site preparation was planned for late 1972 with some facilities to be built in 1973. The major plant construction would last from early 1974 to mid-1976. According to the applicants, they did not expect that the proposed stretching of the project schedule would alter overall project economics. In their submission they anticipated normal escalation in plant costs would be offset by economies in capital and operating costs from developing technology and by efficient use of Syncrude personnel.

In response to questioning Mr. Spragens contended that if the proposed project was abandoned at this time and started up again in several years, the expertise that has been gathered in the organization over the past some 12 years would be lost. He added that "to shut down and to build up a new organization in two or three years from now would make it impossible to meet the four and one-half year schedule of that date" and that it is difficult to assign a cost to such a factor that could well affect the project in later years.

United States Demand

The applicants prepared a new forecast of United States oil demand. They now predicted demand to reach levels of 16.2 and 18.5 million barrels per day⁽²⁾ in 1975 and 1980, with levels of 16.7 and 17.1 million barrels per day, during the proposed start-up time, in 1976 and 1977 during which full proposed production is expected, respectively. The new 1980 figure is some 1.3 million barrels per day higher than the applicants' previous forecast, summarized in OGCB Report 68-C. The new projection represents an average annual growth rate of 2.9 per cent over the period 1968 to 1980, as compared to the previous 2.5 per cent growth rate.

The applicants' forecast was based on an examination of the historical growth in oil demand and the anticipated performance of such economic factors as the growth of population, real gross national product and associated energy requirements. The specific estimates presented were derived from the projected consumption of the following individual products: motor gasoline, kerosene, kerosene jet, distillates, residual and other remaining products. The applicants cross-checked their forecast by a separate compilation by the five major market sectors: transportation, industrial, commercial, residential and utilities.

The applicants also presented other current forecasts of United States demand which, they contended, confirmed their own projection. Five sources - Texas Eastern Transmission Corporation,

(2) Defined on basis, used by Board in OGCB Report 68-C.

United States Department of Interior, The Chase Manhattan Bank, Texaco Incorporated and Pan American Petroleum Corporation - all estimated United States demand as over 18 million barrels per day by 1980.

United States Production, Excluding Alaska

The applicants also submitted new data on the supply capabilities of the contiguous 48 states. They claimed that the Board's estimate of supply capacity set out in OGCB Report 68-C was too optimistic since new evidence indicated definite limitations on production capabilities in the three major prorated states in Districts I to IV. The adoption of a 100 per cent market demand factor in Oklahoma, a continued downward shift in long term producing capability in Texas and the levelling off of Louisiana production capabilities were all interpreted as justifying their previous forecast, summarized in OGCB Report 68-C, which was lower than the Board's forecast. The applicants also cited as evidence The American Petroleum Institute estimate of a continued decline in the United States life index and the first decline ever estimated in United States productive capacity. With respect to District V, the disappointing results of off-shore exploratory drilling in the Santa Barbara Channel were believed to further justify their low estimate of supply.

Changes in Circumstances

No specific evidence was presented on the future terms of entry of Canadian oil into United States markets. The applicants did not expect any significant change in the mandatory oil import policy.

IV SUBMISSIONS OF INTERVENERS

Banff Oil Ltd.

Banff, on behalf of itself and Aquitaine Company of Canada Ltd. submitted an intervention which opposed the application on the bases of the uncertainties regarding the magnitude of the recent Alaskan discoveries and the strengthening United States government restrictions on Canadian crude oil imports. They contended that the "new within reach" market proposed by the applicants would not represent a net gain in the market for Alberta crude oil.

Banff did not introduce any new evidence relating to the probable Alaskan developments, the crude oil supply and demand situation in the United States or the entry of Canadian oil in to United States markets other than to state that as of the date of the hearing the balance of probabilities did not favour the position that a United States supply deficiency would exist in 1976.

With regard to the proposed date for the commencement of commercial operations, Banff recommended that consideration of the application should be delayed for a period of three years since the applicants have postponed their proposed start-up date for that period of time. This delay would allow a better assessment of both United States import controls and the Alaskan crude oil supply picture.

BP Exploration Canada Limited and Triad Oil Co. Ltd.

BP Exploration and Triad tendered the same arguments in their

interventions and therefore their submissions were considered jointly at the hearing.

The only evidence submitted by BP Exploration and Triad under the issues outlined in Section II of this report dealt with the proposed commencement of production date. It was their contention that there is no justification for granting an approval to the applicants at the present time when it had previously been demonstrated that if construction of the proposed plant did not proceed until 1973, commencement of production could be realized in late 1976. They expressed the opinion that approval of the application, and consequently future markets, at the present time "is not an acceptable basis for implementing the Government's Oil Sands Policy" since this could have the effect of inhibiting the development work in other oil sands areas.

In addition, BP Exploration and Triad stated that they were opposed to extending the preferential position enjoyed by the applicants since their original application in 1962, in view of the fact that others are currently investigating the possibility of producing crude bitumen from areas which have been classified as "oil sands" areas subsequently to the 1962 application.

Chevron Standard Limited

In its submission opposing the application Chevron introduced evidence under the five matters of consideration outlined in OGCB Report 69-B. ⁽¹⁾

(1) OGCB Report 69-B. Supplement to the report of an application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act.

(1) The Probable Alaskan Developments

Chevron stated that the applicants had not introduced any new evidence which would assist the Board in assessing the magnitude of the Alaskan discoveries and therefore the uncertainties which existed at the time of the August 1968 hearing have not been removed. Chevron pointed out that at the time of the 1968 hearing the North Slope discovery had been defined by only two wells, and that it would appear from the present number of locations in that area information from over 60 wells would be available for forecasting purposes by 1971. The announcement in December 1968 of a task force appointed by the Canadian government "to assess the implications of the Alaskan North Slope discoveries on Canadian crude oil developments" was introduced by Chevron as a measure of the concern of the Canadian government with that discovery. Chevron expressed the opinion that the report of this task force would be available before mid-1971.

(2) The Proposed Amended Date at which Commercial Operations would Commence

Since the applicants had stated at the August 1968 hearing that the proposed plant could be on stream within $4\frac{1}{2}$ years from the approval date, Chevron expressed the belief that, if an approval were issued to the applicants as a result of a hearing in late 1971, enough time would be available to complete the plant construction before the presently proposed commencement of production date. It stated that the consideration of an application at a hearing held in late 1971 would allow the Board a better opportunity to assess many of the uncertainties which now

exist with respect to the impact of the proposed synthetic crude oil production on the conventional crude oil market.

Chevron expressed the opinion that the applicants' statement regarding the difficulty of the participating companies to finance support for oil sands development without a "definite foreseeable goal" was not a proper consideration for the hearing.

(3) New Evidence of the Applicants and Others
Relating to the United States Demand

Chevron submitted that it was in general agreement with the "level and trend" of the applicants' present United States demand forecast.

(4) New Evidence of the Applicants and Others Relating
to the Production of Oil in the United States
Elsewhere than Alaska.

The applicants' forecast of United States oil production in the 48 contiguous states was said by Chevron to be overly pessimistic although it did concede that high demand forecasts for the period 1970 to 1980 may "put a strain on U. S. productive capacity". Chevron also stated that it appeared that United States imports of crude oil would be allowed to increase as United States production approaches productive capacity.

(5) New Evidence of the Applicants and Others Relating
to Substantial Changes in Circumstances Affecting
the Entry of Canadian Oil in United States Markets.

Chevron pointed out that an agreement between the governments of Canada and the United States regarding the restriction of Canadian crude oil imports to the United States had been released in February 1969, and that, considering this agreement, it would appear unrealistic to expect that crude oil import restraints

would be abandoned in the foreseeable future. Chevron further pointed out that it appears that the Canadian government intends to ensure that the terms of the agreement are complied with. Reference was also made by Chevron to the United States Presidential task force which was currently being set up to review United States import policy.

Chevron expressed the opinion that as long as Canadian crude oil could be marketed at a lower delivered cost than United States crude oil into the Great Lakes area, the United States would be required to place restrictions on the flow of Canadian crude oil to protect the United States domestic oil producing industry. Since there is no differentiation between conventional crude oil and synthetic crude oil under the Oil Import Administration policy in the United States, Chevron concluded that with import restrictions on Canadian crude oil the synthetic crude oil production exported to the United States would be replacing an equal volume of conventional crude oil.

Future developments of Canadian crude oil supplies in the Canadian Arctic, the Northwest Territories, Hudson's Bay and the Atlantic offshore, were cited by Chevron as being additional uncertainties which may affect the crude oil market by 1976 - 1977.

In summary, Chevron, in agreement with a statement made by Mobil, contended that "the uncertainties which existed at the time of the August 1968 hearing have been substantially increased by developments since that time."

Dome Petroleum Limited

Dome recommended the application be denied, but that the applicants be given priority with respect to any future applications made after 1971 for the production of synthetic crude oil from the oil sands.

Dome stated that the Board would be in a much better position in two years' time to evaluate the effects and results of the exploration programs currently being carried out in Alaska as well as the Mackenzie Delta and the Arctic Islands. Evidence regarding the minimum work obligations assumed by the oil industry in the Northwest Territories, Arctic Islands and offshore West Coast and East Coast as estimated by Supplementary Land Services Limited was introduced by Dome as a measure of the exploration activity which would take place in these areas within the next five years.

With respect to the proposed commencement of production date, Dome stated that there is no need to approve the application seven years in advance of the date of first commercial production when the applicants had previously indicated that construction of the plant would require only $4\frac{1}{2}$ years.

Dome pointed out that history since the applicants' 1962 application has shown that forecasts made at that time were "unduly optimistic on the markets and unduly pessimistic on the rates of discovery".

Dome did not introduce any new evidence regarding the importation of Canadian oil into the United States.

Great Plains Development Company of Canada, Ltd.

Great Plains agreed with the other interveners who stated that consideration of the application should be deferred until 1971.

Mobil Oil Canada, Ltd.

Mobil recommended that the application be denied at this time since it did not believe that any new evidence had been introduced by the applicants which would indicate that production from the proposed plant would represent a new gain in the market for Canadian crude oil.

Mobil submitted that judgment of the application on the Board's 'High Alaska' case would not be valid since new evidence introduced at the hearing, specifically the plans for construction of a 900 million dollar pipe line from Alaska's North Slope to the West Coast and "the complete change of atmosphere in the United States in respect of the mandatory import program", casts doubts on the reliability of the August 1968 predictions.

Mobil stated that the three year postponement of the plant start-up date did not provide sufficient evidence to allow for the granting of the application at the present time.

No evidence regarding the United States demand for crude oil or the production of crude oil from the 48 contiguous states was introduced by Mobil.

Mobil made reference to task forces being established by the governments of Canada and the United States, to investigate respectively the impact of petroleum developments in the north

on the Canadian conventional crude oil industry and the future United States crude oil import policy, as an indication of the uncertainty of the importation of Canadian crude oil into the United States. Mobil also noted that the previously secret agreement between Canada and the United States provides for the restriction of Canadian crude oil imports into the United States until 1971.

V THE PROBABLE ALASKA DEVELOPMENTS

In this section the Board reviews the developments which have occurred and may be expected to occur in connection with the discovery of oil on the North Slope of Alaska. Reference is made to the opinions which were expressed at the hearing but much of the discussion deals with the Board's understanding of the situation as influenced by published comment of knowledgeable consultants and oil company and government officials.

(1) Views of the Applicants

The applicants indicated that they had estimates of Alaskan production capabilities that were not "seriously incompatible", in their opinion, with the Board's high Alaska case developed in OGCB Report 68-C⁽¹⁾. They stated their willingness to be judged on the basis of the Board's high Alaska estimate. The applicants declined to give further evidence on the North Slope supply possibilities, and they did not indicate any revision to their previous forecast of Cook Inlet production.

(2) Views of Chevron

Chevron maintained that no definitive information regarding future developments on the North Slope had been forthcoming since the August 1968 hearing. It was Chevron's opinion that major uncertainties concerning North Slope reserves and production would preclude a reliable assessment at least until 1971. In support

(1) Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December, 1968.

of this view, Chevron referred to the fact that information relating to wells drilling during the current year on the North Slope could be withheld for a period of up to 25 months. Moreover, Chevron pointed out that the impact of North Slope production on markets for Canadian oil was currently being studied by a task force appointed by the Canadian Government. In the interim, Chevron contended it would be inadvisable to rely on DeGolyer and MacNaughton's original estimate of North Slope reserves, since the latter had been prepared at a time when only two successful wells had been completed and hence might be subject to a wide margin of error.

In view of the uncertainty surrounding the North Slope, Chevron was of the opinion that any production forecast for the area was likely to be conjectural. For this reason, the estimates of North Slope production submitted by Chevron were in the form of a minimum allowance amounting to a constant 250 thousand barrels per day between 1973 and 1980. A similar treatment, involving a constant allowance of 200 thousand barrels per day, was adopted by Chevron at the August 1968 hearing. However, Chevron expressed the belief that several developments, including the announcement of a Trans-Alaskan pipe line, the possibility of an additional pipe line via Canada and the forthcoming test of an ice breaking tanker, indicated that companies involved in North Slope exploration envisaged eventual production greatly in excess of the Board's previous high case of 1.5 million barrels per day by 1980. In response to questioning at the hearing, Chevron

stated that its own officials entertained a maximum level for North Slope production of some 2.5 million barrels per day by 1980.

With respect to Cook Inlet, Chevron forecast that production would decline from 230 thousand barrels per day in 1970 to 220 thousand barrels per day in 1975 and reach a level of some 200 thousand barrels per day by 1980.

(3) Views of Dome

Like Chevron, Dome believed that the North Slope of Alaska would continue to pose major uncertainties for at least another two years. Dome observed that the applicants had been markedly reticent about Alaska during the hearing, whereas officials of some of the companies involved in Syncrude had made a number of public pronouncements on the subject. In this connection, Dome referred to a newspaper report in which Mr. T. F. Bradshaw, President of Atlantic Richfield Company, was quoted as saying that the ultimate capacity of the Trans-Alaskan pipe line could be as high as two million barrels per day, and that penetration by Alaskan oil of markets on the United States East Coast was a reasonable expectation by 1975. Dome stated the reserve potential of the North Slope might amount to as much as 40 billion barrels, and that production could reach some 10 million barrels per day between 1990 and 2000.

Dome was asked at the hearing to provide an estimate of the production rates corresponding to North Slope reserves of 10 billion barrels. Dome noted that the application of reserve life

indices of 15 and 10 years would yield production levels of 1.8 and 2.7 million barrels per day, respectively. It was Dome's opinion that a figure in the supper part of this production range would be a reasonable projection for 1980. Dome entertained the possibility of a life index of the order of 10 years partly because the United States as a whole was currently producing on a similar reserve life, and partly because the enormous markets awaiting North Slope production in the United States would remove the necessity for prorati~~o~~ning.

An additional matter to which Dome drew attention was the forthcoming Alaska land sale in September. In Dome's opinion, the lease bonuses realized by the sale would provide a more positive guide to industry's evaluation of prospects on the North Slope.

(4) Views of Mobil

Mobil expressed the opinion that the uncertainties connected with the impact of Alaskan North Slope production had been substantially increased since the August 1968 hearing. In support of this view, Mobil referred to the growth of activity on the North Slope and the announcement of plans for a Trans-Alaskan pipe line with an ultimate capacity of some 2 million barrels per day. Mobil submitted that the establishment of a Canadian Government task force to study the implications of Northern developments provided a measure of concern regarding recent events.

With respect to potential reserves on the North Slope, Mobil stated that its land position in the area prevented the disclosure

of competitive information. However, on the basis of published information, Mobil stated it was reasonable to infer that a number of participants in North Slope exploration anticipated substantial reserves. In this context, Mobil alluded to the Manhattan tanker project and the proposed investment of some \$900 million in a 48-inch Trans-Alaskan pipe line. Mobil estimated that an additional investment of \$1 billion would be required if a pipe line were chosen to implement the plan to market North Slope production in United States East Coast markets. Mobil also quoted from a report of a statement by Mr. M. A. Wright, Chairman of Humble Oil, to the effect if the Prudhoe Bay field were as large as indicated the United States energy gap could be delayed by five years, whereas if the North Slope developed into a major oil province the energy gap could be delayed by between 10 and 15 years.

In the light of the new evidence available since the August 1968 hearing, Mobil recommended that the Board should reconsider the high case for Alaska production developed in OGCB Report 68-C.

(5) Views of the Board

In assessing future Alaska production, several interveners drew attention to the persistence of major uncertainties regarding developments on the North Slope, a situation which was interpreted to indicate the desirability of postponing a decision on the current application for two or more years.

The Board has considered these views in relation to the terms of reference governing the current application. In Section IV of

OGCB Report 69-B⁽²⁾, the Board stated its intention to judge the current application on the balance of probabilities "as they may then best be assessed", having regard for a number of factors including "the probable Alaskan development". The Board agrees that knowledge of the North Slope is deficient, partly because the area is in the early stages of development and also because companies are unwilling to release well information at the present time. However, the Board's decision in OGCB Report 69-B clearly recognized the necessity of disposing of the current application on the basis of the information available to date. Moreover, the Board's primary concern is limited to developments up to 1980. In the Board's opinion, sufficient information is available to permit a broad appraisal of the balance of probabilities during this period.

Subsequent to the August 1968 hearing the Board published in OGCB Report 68-C a high and low estimate of future Alaska production. At the latest hearing, the applicants stated their willingness to be judged on the basis of the Board's previous high case, whereas Chevron, Dome and Mobil offered the opinion that companies actually involved in North Slope exploration anticipated somewhat larger volumes of production. The absence of any comment regarding the low case indicates to the Board that this case is now generally agreed to be an underestimate. The Board agrees that it can no longer be considered reasonable even

(2) Supplement to the Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. March, 1969.

as a low case.

The Board recalls that its high case projected increases in North Slope production from a level of 1 million barrels per day in 1975 to 1.5 million barrels per day in 1980, and included a constant allowance of 250 thousand barrels per day for Cook Inlet production. The high case was intended to reflect the upper range of DeGolyer and MacNaughton's original reserve estimate of 5 to 10 billion barrels, which related to an area of some 100,000 acres surrounding the two Prudhoe Bay discovery wells⁽³⁾. The Board believes that the prospects for the development of a 10 billion barrels reserve in the vicinity of Prudhoe Bay have been enhanced by subsequent drilling. In this connection, the Board notes that a confirmed, productive oil well has been drilled at a location approximately midway between the two discovery wells and that several wells, rumoured to be productive of oil, have been drilled over an area which extends some 15 miles west, and a similar distance east, of the original discoveries. Moreover it appears prudent to acknowledge the possibility that additional oil bearing structures will be discovered over a much wider area of the North Slope. In the Board's opinion, the necessity for making such an allowance is indicated by a confirmed, productive oil well some 30 miles to the west of the original discoveries and an oil well rumoured to be productive approximately 45 miles to the south-east.

The Board recognizes that adequate technical data have not

(3) Atlantic Richfield Company Press Release July 18, 1968.

been released on any of the North Slope wells and therefore it is impossible to derive reserve estimates of normal reliability on the basis of drilling results. However, the Board believes that the apparent success of the North Slope drilling program provides a useful background for a review of reserve estimates emanating from other sources. The Board has had particular regard for two public announcements on this subject. The first is a statement made by Honourable W. J. Hickel, in his former capacity as Governor of Alaska, in which he referred to the fact that Alaska state geologists estimated ultimate reserves on the North Slope, including the foothills area, at some 40 billion barrels.⁽⁴⁾ The second is the recent submission of DeGolyer and MacNaughton to the Cabinet Task Force on Oil Import Control, which estimated ultimate Alaska reserves at 50 billion barrels, of which some 25 billion barrels were assigned to the North Slope. In view of these statements, the success already achieved in North Slope drilling and the announced transportation plans and studies discussed below, the Board concludes that the balance of opinion favours the development of extremely large reserves both within and beyond the Prudhoe Bay area. The Board recognizes that the range of expectations is wide. Nevertheless, on the basis of the available evidence, the Board cannot believe that the reserves discovered on the North Slope by 1980 will be less than about 15 billion barrels, considers some 20 billion barrels to be more probable and believes it quite possible that the reserves could be as high as 30 billion barrels.

(4) Reported in Oilweek September 30, 1968.

In determining changes which should be made to its previous high Alaska production forecast, the Board has again relied on statements by informed sources in industry and government. The Board agrees with Mobil that announcements regarding a 48-inch Trans Alaska Pipe Line System (TAPS) provide a useful indication of the initial volumes of North Slope production expected by the three participating companies, Atlantic Richfield Company, Humble Oil & Refining Company and BP Oil Corporation (BP). The Board notes that TAPS is scheduled to come on stream in 1972 to 1973, with an initial capacity of 500 thousand barrels per day and ultimate capacity of 2 million barrels per day. The Board believes that the initial capacity of the line will probably be fully utilized in 1973, a view which is consistent with the opinion of Mr. T. E. Kelly⁽⁵⁾, Commissioner of the Alaska Department of Natural Resources, that Alaska will probably rank among the top five producing States at that time. Moreover, it is the Board's belief that the companies concerned would not propose an investment of some \$900 million in TAPS unless they were reasonably assured of rapid increases in the rate of utilization of the line. The Board believes that throughput can be expected to grow to some 1 million barrels per day by 1975 and may approach 2 million barrels per day by 1978. The projection for 1975 is identical with the Board's previous high case for the North Slope and is broadly consistent with DeGolyer and MacNaughton's opinion that total Alaska production will reach

(5) Speech before San Joaquin Geological Society reported in Oil & Gas Journal. September 23, 1968.

1 million barrels per day in 1975 to 1976. Subsequent increases in TAPS throughput up to a level of some 2 million barrels per day in 1978 assume intensive development of the North Slope during this period. It is the Board's opinion that such development will be spurred by the incentive to recover the large capital outlays associated with the area. The time-table of development also appears to be in keeping with the plans of one of the major companies involved in North Slope exploration, BP, which owns a 37.5 per cent interest in TAPS. In particular, the Board has had regard for the proposed merger between BP and Standard Oil Company (Ohio), under which BP would achieve 54 per cent ownership if its North Slope production should reach 600 thousand barrels per day by 1978.

The Board believes that an allowance should be made for additional deliveries resulting from an expansion in the ultimate capacity of TAPS or the construction of new transportation facilities possibly before, but certainly soon after, 1978. The Board notes that several proposals for alternative methods of transportation are currently under investigation, the most important being the voyage of the S. S. Manhattan through the Northwest Passage and the recent formation of Mackenzie Valley Pipe Line Research Limited to study a pipe line route from the North Slope to Edmonton. In the Board's opinion, the commitment of funds to new ventures provides a strong indication that a number of informed sources anticipate that North Slope production will exceed 2 million barrels per day in the period up to 1980. Accordingly, the Board has made an allowance for continued

growth in North Slope production beyond 1978 to reflect increases in transportation capabilities.

The Board's new forecast of North Slope production is shown in Table V-1. Also shown in the table is a constant allowance of 250 thousand barrels per day for Cook Inlet production.

TABLE V-1

Forecast Production of Conventional Liquid Hydrocarbons in Alaska
(thousands of barrels per day)

	<u>1970</u>	<u>1973</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
North Slope	-	500	1,000	1,300	1,600	2,000	2,400	2,800
Cook Inlet	250	250	250	250	250	250	250	250
Total	250	750	1,250	1,550	1,850	2,250	2,650	3,050

The Board recognizes that the forecast for the North Slope is unlikely to be realized on a year to year basis. It is the Board's view that the production forecast is consistent with the establishment of reserves of some 20 billion barrels by 1980 and that this is a reasonable expectation based on the Board's range of reserve estimates for the end of the period, which varies from 15 to 30 billion barrels. The Board is aware that the production forecast could be low if reserves were of the order of 30 billion barrels. However, the Board believes that the rate of North Slope production would not increase in proportion to any increase in the reserves above the level of 20 billion barrels. This view is based upon the length of time necessary for discovery and development of the reserves, the transportation facilities which would be needed, the market opportunities required and the enormous capital expenditures involved.

VI THE PROPOSED AMENDED START UP TIME

In OGCB Report 69-B⁽¹⁾ the Board indicated that the willingness of the applicants to delay the start of commercial operations of the proposed plant some three years from the date proposed in their 1968 application, coupled with new evidence regarding other matters, could influence the Board's Finding 6 of OGCB Report 68-C⁽²⁾ and satisfy the Board that the Alaskan discoveries "may not be a barrier to the granting of the application". The first question to be resolved, however, is whether the Board should at this time consider an application for approval of operations which would not start until mid-1976, when the applicants themselves have previously indicated that four to five years lead time would be adequate. A related matter is the effect of the proposed delay on the economics of the scheme as submitted by the applicants in their 1968 application.

(1) Views of the Applicants

The applicants stressed that internal company economics necessitated a definitive answer to their oil sand plant proposals at this time. They stated that past deferments had strained project financing and that further deferment of unconditional

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- (1) Supplement to the Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. March, 1969.
 - (2) Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December, 1968.

approval would effectively prevent continuing financial support from the companies involved in the project.

The applicants submitted that although the proposed delay in the commencement of production would increase plant costs due to normal cost escalation, this effect could be offset by improvements in process and equipment design. They stated that Syncrude personnel would be capable of doing most of the design work on the plant and that, therefore, there would be less dependence on outside consultants under the revised work schedule.

Further pilot testing and studies on the extracting and upgrading processes would be carried out during the next two years, while specification engineering would take place between 1971 and 1973. The construction schedule called for site preparation starting in late 1972, and major plant construction commencing in late 1974 with completion of mechanical facilities by mid-1976. Production would begin in mid-1976 and lead to full capacity production in early 1977.

(2) Views of Banff

Banff recommended the matching of the three-year delay in commencement of production proposed by the applicants by a similar delay in the Board's consideration of the project. Banff pointed out that the applicants were requesting a Board commitment seven years into the future while an efficient project schedule would permit reconsideration of the applicants' proposal in three years time, thus allowing for a much more realistic assessment of the crude oil supply and demand picture for the years following 1976.

(3) Views of BP Exploration and Triad

BP Exploration and Triad expressed the opinion that it would be improper to pre-empt future markets by issuing an approval at this time in view of the applicants' statement that production could commence in late 1976 with plant construction starting as late as 1973. They argued that the approval of a deferred start up date would inhibit continued research and development by other companies in the oil sands area. Furthermore, these interveners saw no justification for a three-year extension in Syncrude's preferential position as conditions had changed by virtue of the inclusion of Cold Lake type heavy oils in the amended Oil Sands Development Policy of February 1968.

(4) Views of Chevron

Chevron concluded on the basis of the 1968 hearing that the applicants would require only $4\frac{1}{2}$ years from the approval date to bring the plant on stream and, therefore, if the applicants' proposal were heard in late 1971, ample time would be afforded them to realize their proposed start up date. Chevron agreed with Banff that the uncertainties regarding the supply and demand situation of Canadian conventional crude oil could be better assessed in 1971.

Chevron also contended that the applicants' problems in maintaining organizational and financial support for the project were not relevant to the hearing.

(5) Views of Dome

Dome argued that there was no need to grant an approval

seven years in advance of the proposed start up date when the applicants had previously submitted that construction of the plant could be accomplished in $4\frac{1}{2}$ years. However, they recommended that the applicants receive priority for a similar application made after 1971.

(6) Views of Mobil

Mobil contended that there was no justification for the applicants to expect the Board to make a final decision in the present environment of uncertainty.

(7) Views of the Board

The Board notes that most of the interveners argued that the three-year delay in the inception of production from the proposed plant rendered a decision by the Board unnecessary at this time and recommended that a decision be deferred for two years or more. The Board agrees that to some extent the application is premature but it also appreciates the singular situation of the applicants. In particular, the Board has sympathy for the fact that the applicants have been seeking a decision since 1963 and recognizes the difficulties which continued deferral of a definite decision causes the applicants' organization. The difficulties are particularly onerous for the contracting company, Syncrude, in continuing its research and development work.

The Board has had regard for the concern of BP Exploration and Triad that approval of the application would inhibit potential developments in the oil sands by other companies. However, under the circumstances, the Board believes it proper that it proceed

to deal with the application.

The Board accepts the applicants' evidence that the changes to the project schedule resulting from the three-year delay would not significantly affect the economics of the scheme.

In conclusion, although the Board is fully aware of the difficulties of assessing an application for a plant which would not commence production for some seven years from the date of application - and is especially cognizant of the burden it places on the Board - it does not believe such difficulties are sufficient to warrant deferral of disposition.

VII THE UNITED STATES SUPPLY-DEMAND BALANCE

Because of the close interrelations involved, the Board has found it convenient in this section of the report to deal with the United States demand for crude oil, the anticipated production of crude oil from the contiguous 48 states, and the resulting deficiency in United States supply.

United States Oil Demand

(1) Views of the Applicants

For the period 1968 to 1980, the applicants forecast an average annual growth rate in United States demand of 2.9 per cent, as compared to the figure of 2.5 per cent contained in the previous application of May 3, 1968. On this basis, United States demand was expected to total 16.2 million barrels per day in 1975 and 18.5 million barrels per day in 1980. At the inception of production from the proposed scheme in 1976 and 1977 demand was projected at 16.7 and 17.1 million barrels per day, respectively. The applicants gave details to justify the new demand forecast and presented other current forecasts in support of their estimates.

The applicants pointed out that the actual average annual growth rate in demand over the period 1950 to 1968 was 3.7 per cent, and that a projection of this rate would give forecasts of 16.8 million barrels per day in 1975 and 20.1 million barrels per day in 1980. The corresponding figures for 1976 and 1977 would be 17.5 and 18.1 million barrels per day, respectively. However,

in cross-examination at the hearing, Dr. W. F. Thompson, a witness for the applicants, gave reasons for considering an extrapolation of the historical rate too high. One of the principal factors, in his opinion, was that many former opportunities for substitution towards petroleum products could be exhausted in the future.

The applicants believed their forecast growth rate of 2.9 per cent to be attainable because of strong upward trends in gross national product and energy use. An accelerated growth in the labour force, partly caused by the changing age distribution of the population, and the government anti-poverty program were expected to increase the number of active consumers. Direct and derived demand for energy use and other goods and services led the applicants to forecast an average growth rate of 4.3 per cent in real gross national product and 3.6 per cent in energy use.

The applicants used two methods of forecasting actual demand, for cross-checking purposes. The method discussed in the application was division of the total demand into five major products and 'other'. Table VII-1 presents the actual and projected figures for these product demands, and the conversion to the basis⁽¹⁾ employed by the Board in OGCB Report 68-C⁽²⁾.

(1) Board Basis Demand = United States Internal Demand - Processing Gains + Exports - Bonded Oil Imports.

(2) Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December, 1968.

With respect to motor gasoline, the applicants noted that increasing real disposable income affected the number of cars and the number of gallons per car. The increasing proportion of young drivers was expected to increase the average distance travelled. For kerosene, the applicants suggested that demand would decline to a relatively stable level as domestic use declined relative to the agricultural, industrial and commercial uses.

Rapid growth was forecast for kerosene jet fuel on the basis of continuing expansion in air travel. The applicants suggested that, despite the near saturation of the heating oil section of the market, the demand for middle distillate fuel would continue to increase because of strong upward trends in another component, diesel fuel. In the residual fuel market, the applicants postulated relatively slow growth, levelling off around 1974, as a result of increased competition from nuclear power in the public utility sector.

TABLE VII-1

Applicants: United States Petroleum Products Demand
(thousands of barrels per day)

	<u>1950</u>	<u>1960</u>	<u>1965</u>	<u>1968</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
Motor Gasoline	2,488	3,890	4,590	5,259	5,649	6,735	7,580
Kerosene	323	301	268	283	268	257	251
Kerosene Jet		61	333	607	780	1,270	1,950
Distillates	1,082	1,872	2,125	2,336	2,365	2,539	2,678
Residual	1,518	1,529	1,608	1,839	1,880	1,890	1,880
Other	1,047	2,144	2,589	3,012	3,271	4,021	4,833
United States Internal Demand	6,458	9,797	11,513	13,336	14,213	16,712	19,172
Districts I to IV	5,572	8,475	9,945	11,469	12,195	14,295	16,307
District V	886	1,322	1,568	1,867	2,018	2,417	2,865
<u>Plus</u> Exports	305	202	187	238	220	200	185
<u>Less</u> Bonded Imports		200	200	200	200	250	300
<u>Less</u> Processing Gains	49	145	220	312	360	453	539
Board Basis Demand		9,654	11,280	13,062	13,873	16,209	18,518

In support of their own forecast, the applicants presented five other forecasts of United States demand. The forecasts are shown in Table VII-2. The applicants referred to some details of these other studies, particularly the projected growth rates in petroleum demand, which were calculated for the period 1965 to 1980, as opposed to the period 1968 to 1980 used in the applicants' forecast. Texas Eastern Transmission estimated a 3.5 per cent average annual growth rate, the United States Department of Interior estimated a 3.2 per cent annual growth rate, while the Chase Manhattan Bank

forecast a 3.4 per cent annual growth rate. The applicants suggested that, given the variety of the studies, the narrow range of the forecasts demonstrated agreement on the higher levels of demand contained in the applicants' revised forecasts.

TABLE VII-2

Applicants: Other Current Forecasts of United States Demand
for Liquid Hydrocarbons in 1980*
(millions of barrels per day)

<u>Source</u>	<u>Date of Publication</u>	<u>Forecast</u>
Texas Eastern Transmission Corp.	March 1968	18.8
United States Department of Interior	July 1968	18.1
Chase Manhattan Bank	October 1968	18.6
Texaco Inc.	October 1968	18.5
Pan American Petroleum Corp.	January 1969	18.8

* Board Basis

(2) Views of Chevron

Chevron stated that its own estimates of the overall level and trend in United States demand were in broad agreement with the forecast presented by the applicants. Subsequent to the hearing, Chevron submitted detailed projections of United States demand, the major components of which are shown on a regional and national basis in Table VII-3.

TABLE VII-3

Chevron: United States Demand for Liquid Hydrocarbons
(thousands of barrels per day)

	<u>1968</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
<u>Districts I to IV</u>				
Internal Demand*	11,267	11,940	13,914	16,078
Plus Exports	142	143	143	143
Less Bonded Imports	176	205	275	340
Board Basis Demand	<u>11,233</u>	<u>11,878</u>	<u>13,782</u>	<u>15,881</u>
<u>District V</u>				
Internal Demand*	1,815	1,923	2,315	2,836
Plus Exports	91	92	100	99
Less Bonded Imports	46	68	90	120
Board Basis Demand	<u>1,860</u>	<u>1,947</u>	<u>2,325</u>	<u>2,815</u>
<u>Total United States</u>				
Internal Demand*	13,082	13,863	16,229	18,914
Plus Exports	233	235	243	242
Less Bonded Imports	222	273	365	460
Board Basis Demand	<u>13,093</u>	<u>13,825</u>	<u>16,107</u>	<u>18,696</u>

* After deduction of Processing Gains.

No other interveners submitted evidence relating to future United States demand.

(3) Views of the Board

The applicants' revised estimates of United States' demand are higher than their projections submitted at the August 1968 hearing. In relation to the applicants' previous forecast, the new forecast is some 400 thousand barrels per day greater in 1970, and higher by 865 and 1,306 thousand barrels per day in 1975 and 1980, respectively. The applicants' new forecast also exceeds the forecast adopted by the Board in OGCB Report 68-C by amounts ranging from 73 thousand barrels per day in 1970 to 509 thousand barrels

per day in 1975 and 718 thousand barrels per day in 1980. None of the interveners challenged the applicants' views regarding future developments in United States' demand. Chevron's revised estimates correspond to the applicants' forecast up to 1975 but exhibit more rapid growth thereafter.

The Board observes that the applicants' previous forecast underestimated actual demand in the initial period. The higher levels of demand in the new forecast result from the incorporation of new actual data and the projection of a somewhat higher annual growth rate: 2.9 per cent, as compared to 2.5 per cent previously. In order to assess the reasonableness of the levels of demand in the applicants' new forecast, the Board has considered the patterns of growth in other forecasts which have become available since the August 1968 hearing. Three of the forecasts mentioned in the applicants' submission fall within this category and are based on the same definition of demand used by the Board: Texaco, Chase Manhattan and Pan American. The Board notes that only the Texaco forecast corresponds to the applicants' projection for 1980, whereas the 1980 forecasts of Chase Manhattan and Pan American are greater by 100 and 300 thousand barrels per day respectively. The Board also notes that Chevron's estimates exceed the applicants' forecast by some 200 thousand barrels per day in 1980, despite the close similarity between the two projections up to 1975.

In the light of the above comparison, the Board has concluded that the applicants' forecast gives a slightly pessimistic assessment of prospects at the end of the period, and that the growth

pattern predicted by Chevron more accurately reflects the current industry consensus. Accordingly, in calculations relating to future United States deficiencies, the Board will employ the projections of demand which Chevron submitted after the hearing. To permit an analysis of intermediate years, the Board has interpolated Chevron's forecast within the period 1975 to 1980, as shown in Table VII-4.

TABLE VII-4

Chevron: United States Demand for Liquid Hydrocarbons*
(thousands of barrels per day)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
United States Demand (Board Basis)*	13,800	16,100	16,600	17,100	17,600	18,100	18,700
Districts							
I to IV	11,900	13,800	14,200	14,600	15,000	15,400	15,900
District V	2,000	2,300	2,400	2,500	2,600	2,700	2,800

* Numbers rounded to nearest 100 thousand barrels per day.

United States Domestic Oil Supply ex Alaska

(1) Views of the Applicants

The applicants presented new evidence on supply in their submission, and additional data at the hearing. It was suggested that the Board abandon the adjusted estimates adopted in OGCB Report 68-C in favour of the lower estimates of the applicants. For Districts I to IV, the applicants based their forecast of supply capabilities primarily on the increasing difficulties experienced by the three major prorating states - Oklahoma, Texas and Louisiana. The adoption of a 100 per cent market demand factor

in Oklahoma in early 1969 was interpreted as an acknowledgement that productive capacities in that state were unable to meet increasing demand. A graph was presented which showed the historical levelling off in Oklahoma production and was represented as indicating the failure of production to respond to the higher market demand factor. New data from the Texas Railroad Commission on the Texas Allowable Base were interpreted by the applicants as confirmation of the significance of a previous downward shift in Texas long term producing capability. Similarly, new data on Louisiana were believed to indicate a significant levelling off in the growth of Louisiana production capabilities.

During the hearing, Mr. R. G. Daniel, a witness for the applicants, mentioned additional evidence from the American Petroleum Institute annual report. The report showed a decline in the estimated life index for the entire United States from 10.8 years on January 1, 1968 to 10.3 years on January 1, 1969. Also for the first time in the history of the estimate a small decline was estimated for productive capacity on the same dates. The applicants contended that their own forecast for the contiguous 48 states was upheld by the new data available. At the hearing the applicants gave further details of their forecast, as shown in Table VII-5.

TABLE VII-5

Applicants: United States Production of Conventional
Oil in the Contiguous 48 States

(thousands of barrels per day)

<u>Year</u>	<u>Districts I to IV</u>	<u>District V ex Alaska</u>	<u>48 States Total</u>
1970	9,197	1,093	10,290
1971	9,370	1,083	10,453
1972	9,543	1,073	10,616
1973	9,716	1,063	10,779
1974	9,889	1,054	10,943
1975	10,061	1,044	11,105
1976	10,037	997	11,034
1977	10,014	950	10,964
1978	9,991	904	10,895
1979	9,968	858	10,826
1980	9,945	812	10,757

With respect to District V, excluding Alaska, the applicants rejected the possibility of significant offshore discoveries in California. They cited evidence of disappointing exploratory drilling in the Santa Barbara Channel, where at the time of the hearing there were only three known discoveries in 45 drilled wells.

(2) Views of Chevron

For purposes of forecasting production in the contiguous 48 states, Chevron assumed that annual gross additions to reserves in these areas would approximate the average for the preceding 10-year period. Chevron emphasized that the actual production rates corresponding to given levels of reserves were dependent on the extent to which the United States authorities allowed oil imports to supplement domestic production. In this connection, Chevron drew attention to the potentially large number of forecast cases involving different levels of total oil imports. It was Chevron's

belief that the higher levels of demand now being forecast for the period up to 1980 and the uncertainty surrounding the potential of the Alaskan North Slope would induce the United States authorities to permit a greater reliance on imports than hitherto. In its own production forecast, Chevron assumed that total oil imports would grow to approximately 30 per cent of United States demand by the end of the period and alluded to the fact that former Secretary of the Interior Udall had pronounced this level to be the maximum consistent with national security. The resultant estimates of future production in Districts I to IV and the portion of District V excluding Alaska, which Chevron submitted after the hearing, are shown in Table VII-6 below.

TABLE VII-6

Chevron: United States Production of Conventional
Oil in Contiguous 48 States
(thousands of barrels per day)

Year	<u>Districts I to IV</u>				<u>District V ex Alaska</u>			<u>48 States</u>
	<u>Texas & Louis- iana</u>	<u>Other</u>	<u>N.G.L. Prod- uction</u>	<u>Total</u>	<u>Crude Prod- uction</u>	<u>N.G.L. Prod- uction</u>	<u>Total</u>	<u>Total</u>
1968	5,332	2,546	1,447	9,325	1,036	66	1,102	10,427
1970	5,857	2,460	1,500	9,817	1,030	67	1,097	10,914
1975	6,425	2,220	1,750	10,395	985	70	1,055	11,450
1978*	6,715	2,080	1,900	10,695	N.A.	N.A.	N.A.	N.A.
1980	6,280	2,020	2,000	10,300	900	70	970	11,270

* Provided by Chevron for Districts I to IV only.

Chevron observed that the projected levels of production in Texas and Louisiana would result in the virtual elimination of spare capacity in these states by 1978. Consequently, total Districts I to IV production was predicted to decline in the later years of the

forecast. Comment was also made on the projection for District V, excluding Alaska, which had been reduced below the level contained in Chevron's previous forecast submitted at the August 1968 hearing. Chevron stated that the latter reduction appeared to be justified in view of recent offshore drilling results in California, although the indications obtained to date of offshore potential were still inconclusive. For the 48 states as a whole, Chevron believed that the postulated levels of production lay somewhere in the middle of the range of possibilities, whereas the applicants' estimates were unduly pessimistic. Chevron contended that its own forecast might be exceeded in practice, depending on the impact of such factors as the recent general increase in United States crude oil prices.

(3) Views of the Board

The applicants saw no reason to change the production forecast which they submitted at the August 1968 hearing. At the time of the original presentation, the applicants did not provide a breakdown of production by District, with the result that the Board employed its own estimates to apportion the applicants' forecast on a regional basis.⁽³⁾ In their current submission the applicants have furnished the Board with details regarding production in

(3) At the August 1968 hearing, the applicants provided separate estimates for Alaska production only. In OGCB Report 68-C, the Board employed numbers submitted by Chevron to estimate the applicants' forecast for the remainder of District V and, hence, to derive estimates of the applicants' projection for Districts I to IV.

Districts I to IV and District V excluding Alaska. The latter information indicates that the applicants envisage larger volumes of production in Districts I to IV, and correspondingly smaller amounts of production in District V excluding Alaska, than had previously been inferred by the Board. Two important features revealed by the applicants' evidence are that District V production in the contiguous 48 states is expected to decline subsequent to 1975, rather than to remain stable, and that the projected reduction in Districts I to IV production is therefore relatively less severe.

In contrast to the applicants, Chevron revised its previous forecast to incorporate changes in the projections for both Districts I to IV and District V excluding Alaska. Chevron's new forecast depicts a decline in Districts I to IV production after 1978, principally as a result of declines in Texas and Louisiana production, whereas Chevron had previously forecast steady expansion in Districts I to IV production up to 1980. During the period 1975 to 1980, Chevron's latest forecast of production in California and other areas of District V, excluding Alaska, exhibits a decline, in contrast to the stable volumes assumed by Chevron previously.

As a result of the changes introduced by Chevron, and the new information regarding the applicants' forecast, there is now agreement between the two projections regarding the direction of trends in production during the latter five years of the forecast period. Differences remain, however, regarding the timing and

level at which reductions in production will occur. Thus, Chevron's estimate of Districts I to IV production exceeds the applicants' forecast by 334 thousand barrels per day in 1975, is greater by some 700 thousand barrels per day in 1978 and maintains a differential of some 350 thousand barrels per day in 1980. In District V, excluding Alaska, the more moderate production decline forecast by Chevron results in a 1980 level which is some 160 thousand barrels per day higher than the applicants' projection.

In view of the fact that both the applicant groups and Chevron projected annual gross additions to reserves at the historical 10-year average, the Board has concluded that the differences in the production forecasts reflect variations in the underlying assessments of the productive capacities associated with given levels of reserves. In the Board's opinion, the applicants' evidence on current trends in the production capabilities of Texas and Louisiana provides a valuable indication that these states will experience growing limitations in the face of expanding United States demand. A similar situation may arise in California, although the prospects for offshore drilling in the Santa Barbara channel appear to have been enhanced by the announcement of a discovery subsequently to the hearing. With respect to all these areas, the Board notes that the applicants' evidence did not attempt to identify the point in time and rate at which production may be expected to decline. In relation to the latter questions, the Board believes that a genuine diversity of opinion exists and that the evidence does not permit a meaningful choice

between the two forecasts.

Having regard for the above considerations, the Board has decided to adopt the average of the applicants' and Chevron's projections for production in Districts I to IV and District V excluding Alaska. In order to provide estimates for individual years during the latter part of the forecast, the Board has made a linear interpolation of Chevron's District V forecast between 1975 and 1980 and similarly interpolated Chevron's Districts I to IV forecast in the periods 1975 to 1978 and 1978 to 1980. The average estimate which the Board will employ in assessing future United States deficiencies has been rounded to the nearest 100 thousand barrels per day and is shown in Table VII-7 in conjunction with the forecasts of the applicants and Chevron.

TABLE VII-7

Production of Conventional Liquid Hydrocarbons
in Contiguous 48 States
(thousands of barrels per day)

Year	Districts I to IV			District V ex Alaska			Contiguous 48 States		
	Appli- cants	Chevron	Board Average	Appli- cants	Chevron	Board Average	Appli- cants	Chevron	Board Average
1970	9,197	9,817	9,500	1,093	1,097	1,100	10,290	10,914	10,600
1975	10,061	10,395	10,200	1,044	1,055	1,100	11,105	11,450	11,300
1976	10,037	10,495	10,300	997	1,038	1,000	11,034	11,533	11,300
1977	10,014	10,595	10,300	950	1,021	1,000	10,964	11,616	11,300
1978	9,991	10,695	10,300	904	1,004	1,000	10,895	11,699	11,300
1979	9,968	10,495	10,200	858	987	900	10,826	11,482	11,100
1980	9,945	10,300	10,100	812	970	900	10,757	11,270	11,000

United States Deficiency of Domestic Oil Supply

(1) Views of the Applicants

The applicants employed their revised United States demand forecast, their own supply estimates for the 48 states and the Board's

previous high case for Alaska production to derive estimates of the United States deficiency of conventional oil supply in 1975 and 1980. The applicants' numbers for 1975 and 1980 are given in Table VII-8 with interpolations by the Board for the intervening years.

TABLE VII-8

Applicants: United States Deficiency of Conventional Oil Supply
(thousands of barrels per day)

	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
United States Demand* (Board Basis)	16,209	16,671	17,133	17,595	18,057	18,518
United States Conventional Production	12,355	12,384	12,414	12,445	12,476	12,507
United States Deficiency of Conventional Supply	3,854	4,287	4,719	5,150	5,581	6,011

*. Years between 1975 and 1980 supplied by the applicants at the hearing.

Thus, on the basis of interpolated numbers, the deficiency would rise from 4.3 million barrels per day in 1976 to 4.7 million barrels per day in 1977, and ultimately reach some 6 million barrels per day in 1980.

(2) Views of Chevron

Chevron did not submit detailed estimates of the United States deficiency at the hearing, but in response to a request it subsequently provided its figures on a regional and national basis. The latter are shown in Table VII-9. The estimate of production

included Chevron's minimum allowance for North Slope production of 250 thousand barrels per day. Chevron suggested that, in the event that North Slope production exceeded the minimum allowance, the principal impact would be absorbed by lower overseas imports.

TABLE VII-9

Chevron: United States Deficiency of Conventional Oil Supply
(thousands of barrels per day)

	<u>1968</u>	<u>1970</u>	<u>1975</u>	<u>1980</u>
United States Demand (Board Basis)	13,093	13,825	16,107	18,696
United States Conventional Production*	<u>10,608</u>	<u>11,144</u>	<u>11,920</u>	<u>11,720</u>
United States Deficiency of Conventional Supply	2,485	2,681	4,187	6,976

* Based on a constant minimum allowance of 250 thousand barrels per day for the North Slope.

Chevron submitted that the applicants had provided no evidence regarding the portion of the United States supply deficiency in 1976 and 1977 which would be satisfied by Alberta production. For its own part, Chevron expressed the belief that the more rapid growth predicted for United States demand would place some strain on domestic sources of supply in the contiguous 48 states. Hence, in the absence of large volumes of new production from Alaska, Chevron predicted a growing deficit of United States domestic oil supply. Chevron stated this prospect would induce the United States authorities to permit imports to increase, within a framework of controls, to a level equivalent to some 30 per cent of United States demand. Chevron stated that one of the attractions of such a

policy was that it would defer the full utilization of production capabilities in the 48 states. At the same time, the United States would retain the option to reduce overall import quotas if and when substantial volumes of production became available from Alaska.

(3) Views of the Board

The Board's estimates of the United States deficiency in conventional supply are developed in Table VII-10 based upon its previously discussed estimates of United States demand, United States production from the contiguous 48 states and the forecast in Section V of probable Alaska production.

TABLE VII-10

Board: United States Deficiency of Conventional Oil Supply
(thousands of barrels per day)

	<u>1970</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
United States Demand (Board Basis)	13,800	16,100	16,600	17,100	17,600	18,100	18,700
United States Conventional Production							
Contiguous 48 states	10,600	11,300	11,300	11,300	11,300	11,100	11,000
Alaska	250	1,250	1,550	1,850	2,250	2,650	3,050
United States Deficiency of Conventional Supply	2,950	3,550	3,750	3,950	4,050	4,350	4,650

It is of interest to consider the trend in the deficiency up to 1980, as well as the absolute levels expected in 1976 and 1977. In this connection, the Board notes that the strong expansion forecast for United States demand would generate comparatively modest

increases in the estimated deficiency, principally because the growth in United States demand would be accompanied by rapidly rising Alaska production. In the period between 1976 and 1978, when production in the contiguous 48 states is expected to remain static, the projected increases in Alaska production would be sufficiently large to limit the annual growth of the deficiency to an average of 150 thousand barrels per day. In 1979 and 1980, the annual increases in the deficiency would reach some 300 thousand barrels per day as a result of the anticipated decline in production from the contiguous 48 states. However, even in this period, the impact of rising volumes of Alaska production would hold increases in the deficiency below the annual growth of between 500 and 600 thousand barrels per day in United States demand.

The Board has also appraised the United States deficiencies in terms of the remaining import requirements, following the methods discussed in Section XI of OGCB Report 68-C. In particular, the Board has assumed that United States conventional oil supplies will be supplemented by small amounts of indigenous synthetic oil production, that total imports of overseas oil may be maintained at a constant 16 per cent of United States demand and that overland imports will reflect normal growth in Canadian imports and a constant allowance of 30 thousand barrels per day relating to Mexican imports. The various estimates contained in the Board's appraisal are shown in Table VII-11.

TABLE VII-11

Board Estimate of United States Remaining Import
Requirements
(thousands of barrels per day)

	Deficiency U.S. Conventional Oil Supply	U.S. Synthetic Production	Assumed Overseas Imports	Assumed Overland Imports	Remaining U.S. Import Requirements
	(1)	(2)	(3)	(4)	(5)
1970	2,950	-	2,208	598	144
1975	3,550	-	2,576	729	245
1976	3,750	-	2,656	770	324
1977	3,950	-	2,736	817	397
1978	4,050	-	2,816	869	365
1979	4,350	50	2,896	925	479
1980	4,650	100	2,992	980	578

Column (1) shows the deficiency presented in Table VII-10. In column (2), the Board has adopted the low case for United States synthetic oil production developed previously in OGCB Report 68-C. Column (3) gives the levels of overseas imports corresponding to 16 per cent of United States demand. The numbers for overland imports in column (4), are made up of the Board's latest forecast of normal growth in Canadian imports, which was tabulated in OGCB Decision 69-12,⁽⁴⁾ and the constant allowance of 30 thousand barrels per day for Mexican imports. The Board has deducted the assumed levels of United States synthetic oil production, overseas imports and overland imports from the deficiency of conventional oil supply to provide the estimate of remaining United States import requirements shown in column (5).

The remaining United States import requirements arising from

(4) Decision on an Application by Chevron Standard Limited for concurrent Cycling and Gas Sales in the Kaybob South Field. July, 1969.

the deficiency exceed 300 thousand barrels per day in 1976 and reach 400 thousand barrels per day in 1977. Following a slight decrease in 1978, estimated remaining import requirements grow by some 100 thousand barrels per day annually to reach just under 600 thousand barrels per day in 1980.

VIII NEW EVIDENCE RELATING TO THE ENTRY OF CANADIAN
OIL INTO THE UNITED STATES

(1) Views of the Applicants

The applicants did not offer any new specific evidence on the terms of entry of Canadian oil in United States markets other than Mr. Daniel's opinion, given in evidence, that no change would be made in the national security basis of the United States oil import program.

(2) Views of Banff

Banff expressed the belief that the substantial uncertainty concerning the magnitude of recent Alaskan discoveries and the recent restriction on Canadian oil exports would result in Alberta oil continuing to have low priority access to United States markets.

(3) Views of Chevron

Chevron considered that the stringent restrictions under the inter governmental agreement of 1967 made it unrealistic to assume that restraints on the export of Canadian oil would be totally abandoned in the foreseeable future. Moreover, Chevron submitted that even if the United States produced at capacity, imports of Canadian oil into the United States would continue to be restricted as long as significant price differentials between Canadian and United States domestic supplies in the Great Lakes marketing area obtained. At the hearing, Mr. Cahill, Chevron's witness, emphasized his belief that Canadian imports to the United States would grow only in a controlled manner. However, Mr. Cahill indicated that special treatment of some nature for Canadian oil under the terms of the United States import program would continue in the future.

In argument, Chevron stated that the unavailability of the recommendations of the Canadian Government task force and the United States Cabinet Committee task force destroyed the credibility of contentions that restraints on the movement of Canadian oil to the United States would be eliminated.

(4) Views of Mobil

Mobil considered there were two substantial changes in circumstances affecting the entry of Canadian oil into United States markets. These were the appointment by the new United States administration of a Cabinet Committee to examine the entire question of the United States oil import program, and the announcements by major companies relating both to the construction of transportation facilities to move substantial quantities of Alaskan oil to United States markets and to the indicated overall Alaskan potential. Mr. Templeton, the witness for Mobil, testified that the apparent penetrating investigation being undertaken by the Cabinet Committee made it clear that even the balance of probabilities did not favour Canadian oil being a pre-emptive beneficiary of any deficiency in United States demand. Mr. Templeton also could see no reason to assume that after the expiry of the 1967 intergovernmental agreement with respect to the imports of Canadian oil, Canadian oil will be accorded liberalized treatment in United States markets.

(5) Views of the Board

The interveners identified four factors which they contended represented substantial changes affecting the entry of Canadian oil into United States markets. These were: (i) the publication of

the 1967 export agreement between the United States and Canadian Governments, (ii) prospective developments in Alaskan oil production, (iii) the disparity between delivered prices of Canadian oil and domestic oil in marketing areas penetrated by the former, and (iv) the current reviews being undertaken by the United States Cabinet Committee and the Canadian Government task force. The Board has considered each of these matters in turn.

(i) Although the Board agrees that the publication of the 1967 intergovernmental agreement provides new information, it believes that the significance of this fact lies principally in its confirmation of previous evidence. In Section XI of OGCB Report 68-C⁽¹⁾, the Board referred specifically to the framework of agreement between the United States and Canadian Governments concerning acceptable levels of refinery feedstock exports. Consequently, the Board cannot accept that the publication of the agreement constitutes a substantial change in circumstances.

(ii) In OGCB Report 68-C the Board recognized the crucial significance in terms of opportunities for Canadian exports to the United States of the magnitude and rate of development of discoveries in the North Slope of Alaska. The Board considers that Alaskan developments since the publication of OGCB Report 68-C have served to confirm the Board's concern and agrees with the interveners that such developments will have an impact on prospective markets for Canadian oil. The Board believes that the question such developments pose is best accommodated in the

(1) Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December, 1968.

analysis by the assessment of Alaska production in Section V, the computation of the United States supply deficit in Section VII and in the appraisal of the deficiency in Section IX.

(iii) The Board notes that recent increases in the price of crude oil in the United States have served to accentuate the differential between laid down cost of Canadian and United States oil in competing market areas. However, the Board doubts whether such changes since the publication of OGCB Report 68-C qualify as substantial. Moreover, the Board considers that laid down cost is but one element in a refiner's assessment of the value of a crude oil. Others include proprietary incentives, the nature of the crude oil in relation to refinery facilities and product demand and the treatment of Canadian oil under the United States oil import program.

(iv) The Board agrees with the interveners that the extensive review currently being undertaken by the United States authorities concerning the oil import program is a new factor affecting the entry of Canadian oil into United States markets. Moreover, the Board also agrees that, when available, the results of this review would provide a better basis for the Board's appraisal of these matters and may indicate a change in circumstances for Canadian oil exports. However, the present unavailability of these results does not absolve the Board of the necessity at this time of appraising to the best of its ability the probable markets for Canadian oil in the United States.

The Board believes the same arguments apply to the pending

results of the Canadian Government's task force studies.

In summary, the Board reaffirms its recognition in OGCB Report 68-C that the future course of the United States import program is a most complex matter and that fully definitive conclusions at this time are impossible. Nevertheless, the Board does believe that the circumstances governing the entry of Canadian oil into the United States will depend largely on the magnitude, trend and location of any deficiencies in United States supply. Accordingly, the Board considers that its analysis of the significance of both the total deficiencies in United States supply and the remaining United States import requirements undertaken in OGCB Report 68-C provides a basis for indicating the prospects for Canadian exports. This position is predicated on the Board's belief as expressed in OGCB Report 68-C, which it reiterates, that

- (a) some system of United States oil import controls will, in all probability, be continued indefinitely into the future,
- (b) the broad purpose of the import program as it relates to national security will be unchanged,
- (c) if greater reliance be placed on foreign supplies, no less and perhaps more weight than in the past will be assigned to strategic aspects of national security, and
- (d) if greater reliance be placed on overland imports, the United States will have regard for the surplus producing capacity in Alberta, the large reserves of the Alberta oil sands and the potential of unexplored areas in northern Canada.

The Board notes that its interpretation is not incompatible with the position taken by several companies and certain government departments in briefs submitted to the United States Task Force on Import Controls. On the basis of information received to date the Board observes that many companies appear to agree with the statement of Standard Oil (New Jersey) that "there is diminishing rationale for putting both Canadian and overseas oil into a single overall limitation as has been done in the past". Standard Oil Company (New Jersey), National Cooperative Refining Association, Great Northern Oil Company, Ashland Oil & Refining Co., United Refining Company, Murphy Oil Company Ltd., Northwestern Refining Co., The Petroleum Industry Research Foundation and Gulf Oil Corporation advised that, to reflect Canada's special security status, Canadian imports should be exempted from import controls. Clark Oil and Refining Corporation suggested that the integration of Canadian oil with United States supply would give the United States greater flexibility to meet crises in foreign supply. The Dow Chemical Company argued that free access for Canadian oil would encourage development of the transportation facilities needed in a national emergency.

A number of submissions supported an intermediate position that would not exempt Canada from the import control entirely, but would grant special treatment to Canadian imports. Sohio Petroleum Co., Standard Oil Co. (Indiana), Cities Service Co., Union Oil Co. of California and Continental Oil Co. proposed that a decision on the Canadian situation be deferred until

discussions had been conducted on a common North American oil policy. Two companies, Union Oil Co. and Texas City Refining Inc. suggested that Canadian imports should be permitted free access to the United States if the Canadian government agreed to limit overseas imports to a degree comparable to the United States. Tenneco Oil proposed a quota system whereby one quota barrel could be used to import one barrel of overseas oil or three barrels of Canadian or Alaskan oil.

The Board attaches significance to the suggestion by the staff of the Interior Department that in recognition of security considerations, Canadian oil be accorded a special status. The Department of the Interior further referred to the desirability of some intergovernmental assurance to prevent Canada increasing exports to the United States while relying itself on significant volumes of 'insecure' oil. The Board also notes the State Department staff's view that a system of western hemispheric preference or a continental energy policy be implemented over a period of time.

On the other hand, the Board is aware that some companies - Shell Oil Company, Atlantic Richfield, Marathon Pipeline Co., Mobil Oil Co. and Getty Oil Co. - were opposed to special treatment of overland imports and that the United States Department of Commerce recommended that the overland exemption be entirely removed. The Independent Petroleum Association of America suggested overland imports should be included within the overall oil import quota and also noted that Eastern Canada was more vulnerable to stoppages in imports than the United States East coast.

IX OVERALL APPRAISAL OF THE APPLICANTS'
MARKETING PLANS FOR THE SYNTHETIC
CRUDE OIL
(Majority view - G. W. Govier and A. F. Manyluk)

In making an overall appraisal under the Oil Sands Development policy of the applicants' marketing plans for 50,000 barrels per day of synthetic crude oil, the three Board members have been unable to agree on all aspects of the matter. This section gives the majority view of Chairman G. W. Govier and Deputy Chairman A. F. Manyluk, and the majority of the Board is referred to in this section simply as the Board. The following section, Section IX A, gives the minority view of Board Member V. Millard. The appraisal is based upon the views developed in the preceding sections concerning Alaska, United States demand and production, the resulting deficiencies and other matters relevant to the entry of Canadian oil to United States markets.

A. Qualification under the "New Within Reach
Market" Criterion

The Board has previously stated, in OGCB Report 69-B⁽¹⁾, its belief that the marketing plans for the synthetic crude oil would qualify under the "new within reach market" criterion if "the deficiencies in the United States supply in the period 1976 to 1977 would be approximately what the applicants anticipated, at the August 1968 hearing of the application, for the period 1973

(1) Supplement to the Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. March, 1969.

to 1974". As mentioned in Section II the Board is concerned both with the total deficiency in the United States supply of conventional crude oil and with what it defined in OGCB Report 68-C⁽²⁾ as the remaining import requirement.

(1) Total Deficiency in United States Supply

A comparison of the Board's present estimate of the total deficiencies, as developed in Section VII, and the applicants' earlier figures, as reported in OGCB Report 68-C and with figures for the years not then supplied by the applicants interpolated by the Board, is given in Table IX-1 following.

TABLE IX-1

Present Board and Applicants 1968 Estimates of United States Total Deficiency in Conventional Oil Supply (thousands of barrels per day)					
	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Present Board	3,750	3,950	4,050	4,350	4,650
	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Applicants' 1968*	3,430	3,630	3,830	4,140	4,460
Excess of Present Board Estimates Over Applicants' 1968 Estimates for Three Years Prior	320	320	220	210	190

* Based on Board's Interpolation

The present Board figures are derived from forecasts of the total United States demand and of the production in the contiguous 48 States and Alaska. All of these forecasts are subject to

(2) Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December 1968.

uncertainties. The Board has endeavoured to appraise the probable direction and amount of the uncertainties in each of the component figures and through these, the probable range of uncertainty in the total deficiency numbers. Referring to the 1980 estimate a consideration of the range of uncertainty suggests that the 4.65 million barrel per day deficiency, which represents the Board's best judgment based upon all of the evidence available to it, could reasonably be as low as 4.3 or as high as 5.4 million barrels per day. This means that the deficiencies presently estimated by the Board fall below the mid-point of the likely range and to this extent may be considered conservative.

On the basis of these estimates, the Board observes that the United States probably will experience total deficiencies of domestic conventional supply in 1976 and 1977 which exceed the applicants' original predictions for the period 1973 to 1974. The amount of the excess in 1976 to 1977 is about the same as the uncertainty in the figures, although in 1978 and later the excess of the present Board figures over the applicants' earlier ones is less than the likely uncertainty in the numbers. These figures do not suggest any serious abnormalities in the pairing of 1973 and 1974 with 1976 and 1977 in comparison to the relationship between other corresponding years. Moreover, the two sets of figures exhibit a similar increasing trend over the five-year period although the higher figures of the present Board estimate increase somewhat more slowly than the earlier figures of the applicants.

(2) Remaining United States Import Requirements

The Board has also compared its present estimates of the

remaining United States import requirements as developed in Table VII-11 of Section VII with those which it estimated for the low Alaska production case in OGCB Report 68-C. It has chosen this basis of comparison of the remaining import requirement because the Board did indicate in OGCB Report 68-C that it would have expected restraints on the import of Canadian oil to be removed, under its then low Alaska production case, in the period 1973 to 1975; furthermore the applicants did not present remaining import requirement figures in 1968. For the low Alaska production case the Board had estimated remaining United States import requirements of 312,000 barrels per day in 1970 and 493,000 barrels per day in 1975. It did not estimate figures for the intermediate years. In effect the Board's 1968 criterion for the removal of restraints on the import of Canadian oil, expressed in terms of the remaining import requirement, was a remaining requirement well over the 300,000 barrels per day but less than 500,000 barrels per day, say in the range of 400,000 to 500,000 barrels per day.

Figure IX-1 shows the year by year variation in the total United States deficiencies, as summarized in Table IX-1 together with the assumed United States synthetic production, overseas imports and overland imports, and the derived remaining import requirement. Both the Board (low Alaska production) 1968 case developed in OGCB Report 68-C and the Board's present estimates as developed in Section VII of this report are shown⁽³⁾. The

(3) To permit a year by year comparison with its present figures the Board has interpolated its 1968 figures for the intermediate years.

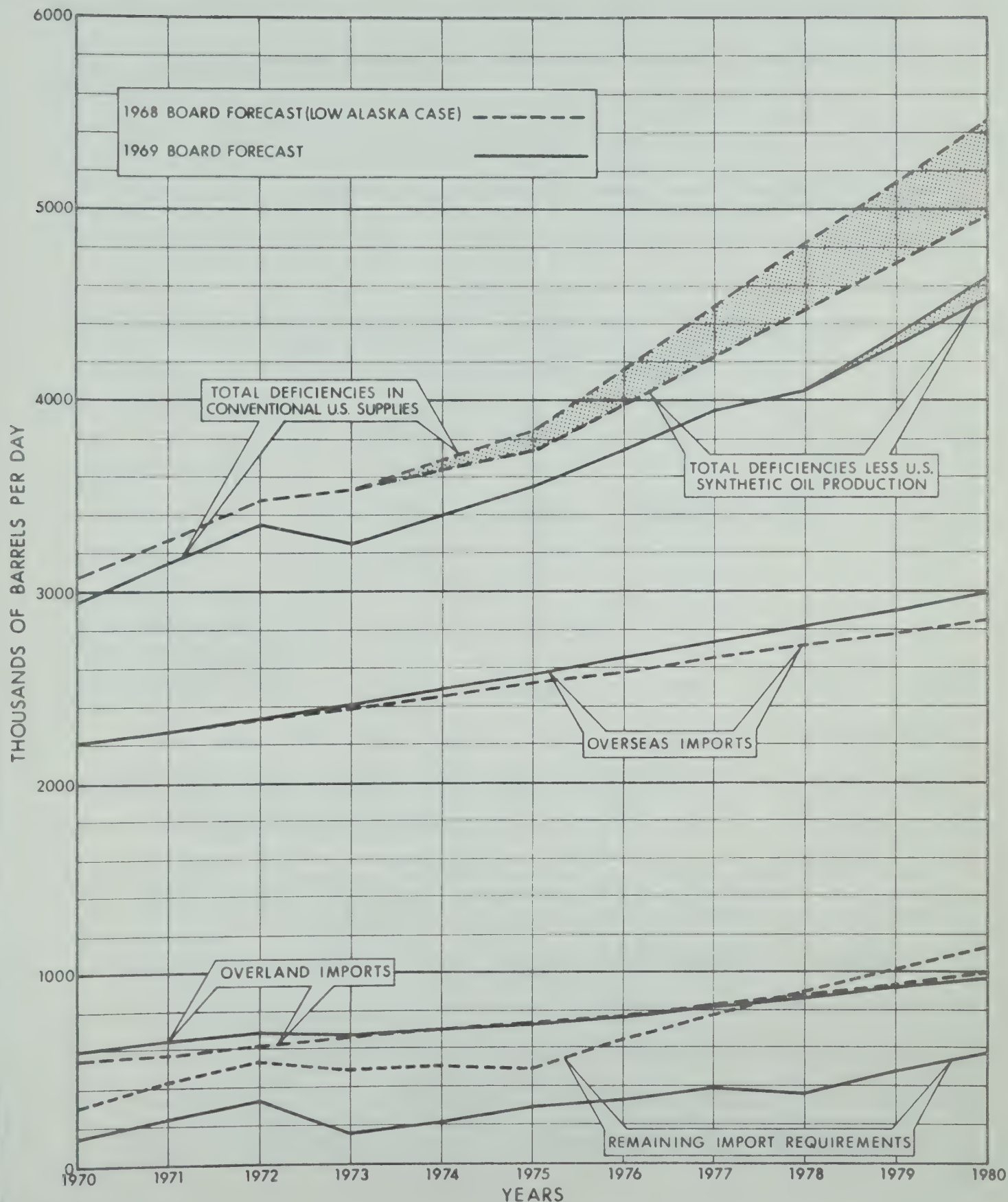


FIGURE IX-1 COMPARISON OF 1968 AND 1969 FORECASTS OF DEFICIENCIES IN U.S. SUPPLY

levelling of the remaining import requirements following 1972 in the 1968 forecast, and their distinct decline from 1972 to 1973 in the present forecast, are direct reflections of the projected entry of Alaska North Slope production early in 1973.

Table IX-2 summarizes the present Board and the 1968 Board estimates of the remaining import requirements.

TABLE IX-2

Present Board and 1968 Board Estimates of Remaining United States Oil Import Requirements
(thousands of barrels per day)

	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Present Board	324	397	365	479	578
	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
1968 Board	497	502	493	637	767
Excess of 1968 Board Estimate for Three Years prior over Present Board Estimate	173	105	128	158	189

This table shows the present Board estimates of the remaining import requirements to be less than the previous ones (applicable three years earlier) by amounts, in 1977 and later, increasing from about 100,000 to nearly 200,000 barrels per day. Nevertheless, both sets of estimates show a similar general upward trend. On the basis of this comparison the Board concludes that the impact of the change in start up time proposed by the applicants, the revisions in the United States demand, the revisions in the supply from the 48 contiguous States and the changes based on the previous assumptions of the overseas and overland imports, together come

within 100 to 200 thousand barrels per day of compensating for the difference between the Board's previous low Alaska forecast and its present, substantially higher, probable Alaska forecast.

Applying the criterion of 400,000 to 500,000 barrels per day the Board observes that the remaining import requirement would reach the lower limit of the range in 1977 and the upper limit before 1980. (The minor drop in the remaining import requirement shown for 1978 is not considered significant since it would be eliminated by a very slight change in the timing or level of the projected Alaska North Slope production.)

The Board also has appraised the impact on its estimates of the remaining import requirements of the probable uncertainties in the component numbers. Here a serious shortcoming in the use of the remaining import requirement as a criterion becomes apparent. This is the fact that, since the remaining import requirement is dependent upon the differences of relatively large numbers, modest uncertainties in the basic information or the key assumptions may lead to uncertainties in the remainder which are relatively large. This applies both to the present Board figures and to its 1968 estimates of the remaining import requirements although it is relatively more serious in the case of the lower 1969 figures. The Board recognizes that the uncertainties are relatively large, and could be in either direction, but the estimates shown in Figure IX-1 and Table IX-2 represent what it believes to be the most probable situation.

(3) Measures of the Probable Deficiency in United States Supply

The Board now has two measures of the probable deficiency in United States supply in the 1976-77 period: the total deficiency which has been seen to exceed by a significant amount that earlier estimated by the applicants for 1973-74, and the remaining import requirement which, while subject to relatively large uncertainties, would probably enter the 400,000 to 500,000 barrels per day range in the year 1977. This is the range where in 1968 the Board believed restraints on import of Canadian oil would be removed. Giving weight to both of these measures the Board accepts that the United States deficiencies as they may now be estimated for the period 1976 to 1977 would be approximately what the applicants previously estimated they would be in the period 1973 to 1974. Barring adverse changes in the overall environment, the Board would expect restrictions on the movement of Canadian oil to be removed and the markets to qualify under the "new within reach" criterion in the 1976-77 period. The effect of changes in the overall circumstances relating to the entry of Canadian oil into the United States is dealt with later in this section.

B. Qualification under the Other "Within Reach Market" Criterion, or the Life Index Criterion.

As a further guide to its judgment in appraising the application, the Board has reviewed and revised the life index calculations presented in Section XII of OGCB Report 68-C. The purpose of this review was to determine whether the application would qualify under the criterion applicable to any "within reach

market", that is, when the life index of Alberta's conventional industry is projected to decline to certain levels. The review has necessitated a reappraisal of the Board's forecasts of Alberta's reserves and production of crude oil.

The Board has reconsidered its low, medium and high projections of initial reserves of Alberta light and medium crude oil, as published in Section VIII of OGCB Report 68-C, and sees no reason to vary them at this time. Also, it continues to consider the low and medium forecasts most applicable to a life index projection.

In Section VIII of OGCB Report 68-C, the Board also presented its basic forecast of the demand for Alberta light and medium crude oil. In Section XII the basic forecast was increased by 25 per cent to give a high projection. Since the publication of that report and in connection with an application by Chevron relating to the cycling of gas from the Kaybob South Field, the Board has made some minor revisions in its basic demand forecast. These were discussed and published in OGCB Decision 69-12. For purposes of the current life index calculations, the revised basic demand forecast has been extended from 1980 to 1985 on the assumptions that opportunities for Canadian oil will be limited to existing market areas in Canada and the United States, and that there will be a gradual relaxation of United States import controls during the period. Under these market conditions, an extrapolation of the trend in production from other areas of Canada, including 'new' areas, and a projection of the trend in Alberta's production of heavy crude

oil and pentanes plus indicated a growth in the demand for Alberta light and medium crude oil from a level of 1,300 thousand barrels per day in 1980 to some 2,000 thousand barrels per day in 1985.

The Board believes that the procedure adopted in OGCB Report 68-C, whereby the basic demand forecast was increased by 25 per cent, should also be applied to the revised basic demand forecast to yield a new high projection of demand for Alberta light and medium crude oil. It is the Board's opinion that this procedure remains valid in view of the possibilities that (a) there may be some relaxation of existing United States import controls prior to 1980, and (b) Alberta oil may achieve a share of eastern Canadian markets during the same period. The Board believes that the realization of either or both of these possibilities would be a gradual process. For purposes of deriving a high demand forecast, therefore, the Board has increased the basic demand forecast by the full 25 per cent only in 1975 and subsequent years, and employed smaller increases in preceding years. The resultant demand for Alberta light and medium crude oil under the high forecast reaches 1,660 thousand barrels per day in 1980 and rises to some 2,500 thousand barrels per day in 1985.

The Board's new life index calculations, based on the low and medium reserve estimates and the new basic and high demand forecasts, are shown in Table IX-3.

TABLE IX-3

Life Index of Alberta's Proratable Crude Oil Reserves
(Years)

End Year	Case I Medium Reserves Basic Demand	Case II Low Reserves Basic Demand	Case III Medium Reserves High Demand	Case IV Low Reserves High Demand
1970	28.9	28.0	27.5	26.6
1975	26.0	23.9	20.2	18.4
1976	24.6	22.2	18.9	17.0
1977	22.9	20.4	17.4	15.4
1978	21.5	18.8	16.1	- - - - -
1979	19.8	17.1	14.6	12.5
1980	18.1	15.5	- - - - -	11.1
1981	16.2	- - - - -	11.6	9.4
1982	14.4	11.8	10.0	7.9
1983	- - - - -	10.2	8.6	6.6
1984	12.8	8.6	7.3	5.3
1985	11.1	7.2	6.0	4.0
	9.6			

In each of the four cases in Table IX-3, the Board has inserted a broken line to indicate the approximate time at which it would be necessary to schedule new oil sands production in order to prevent the subsequent decline of the life index below the critical level of 12 to 13 years. The Board notes that the current application would qualify under the life index criterion sometime between 1977 and 1978 if the trend illustrated in Case IV were to be realized. In view of the underlying assumptions, the Board believes greater reliance should be placed on Cases I, II and III than Case IV. It

is apparent from Cases I, II and III that the current application could not qualify under the life index criterion until 1979 at the earliest, and that approval might have to be deferred until as late as 1982. The Board believes that the most probable date for approval under the life index criterion would be about year end 1980, corresponding with a situation between Cases II and III.

C. Implications to the Conventional Producers if
the Board's Appraisal of the Probabilities
Should Prove to be Inaccurate

In its consideration of the present application the Board has had to forecast reserves, production and demand for crude oil seven and more years into the future. Because of the long forward period of the forecasts they are subject to more than the usual uncertainties. In view of these greater than normal uncertainties the Board has asked itself what the consequences would be if, on the probabilities as it now sees them, and with the approval of the Lieutenant Governor in Council, it were to grant the application; the applicants were to proceed; full scale production were to begin in 1977; and despite the probabilities as the Board now sees them, restrictions on the import of Canadian oil to the United States were to remain in effect to the extent that, say through 1980, the markets available to the conventional producers were reduced as a consequence of the marketing of the synthetic crude oil.

First, there is no doubt in the Board's mind that the applicants, having proceeded in good faith, could not, in the

event assumed, be requested to reduce or discontinue their production. Their authorization would have to be honoured as long as they had met their commitments.

Secondly, in the event assumed, the conventional producers would suffer a reduction in production starting in 1977 in an amount which could be as high as the full 50,000 barrels per day of synthetic crude oil production. Since the applicants' themselves currently supply about 30 per cent of the total market for Alberta crude oil, the share of this maximum deferred production which would be borne by the conventional producers other than the applicants would be about 35,000 barrels per day. Furthermore, it would appear unlikely that import controls would be applied through the full period assumed (that is to the end of 1980) to the full equivalent of the amount of synthetic crude oil. Over such a four-year period the Board would expect that the controls might gradually be relaxed with the result that the annual amount of the deferred production would gradually decline. The Board would doubt if, on average over the period, the conventional producers would suffer a deferment of production exceeding three per cent of their total market.

The deferred production would not be permanently lost because the corresponding productivity would be preserved and, starting from the time when production would otherwise have been limited by productivity, production would be greater than it otherwise would have been. The real loss to the conventional producers would be the difference in the discounted worth of

the production deferred and the same volume of production later regained. The Board believes that this real loss would probably be of the order of three-quarters the actual volume of deferred production in the period 1977 to 1981.

A further important factor in this pessimistic appraisal of what could happen relates to the obligation of the applicants to supply a "new within reach" market to the conventional producers, including themselves, of an additional 50,000 barrels per day. Bearing in mind the fundamental intent of the Oil Sands Development Policy, this obligation would not be put upon the applicants while restraints on the export of Canadian oil remained - the situation being explored. However, once such restraints were fully or even largely removed the obligation would be there and the applicants have accepted it.

Granted that if the life index for the conventional industry were to decline to the point where their project would qualify under the life index criterion, the applicants or approval holders could apply for reapproval under that criterion and to be released from the obligation. In the situation assumed, the Board doubts they would be so released before the conventional producers to the extent feasible had an opportunity to have their loss due to deferment of production offset. On the assumptions which have been made the conventional producers, in addition to regaining the production deferred from 1977 to 1981, would therefore also benefit from a share of the additional "new within reach markets" provided by the applicants.

The overall effect is that the share of new markets would improve the discounted worth of the production following their acquisition and reduce the real loss which might be suffered by the conventional producers. Even so the conventional producers would be exposed to a cash flow loss which might only be partially recouped over a further like period.

D. Qualification Under the Broad Intent of
the Oil Sands Development Policy

Having appraised the marketing plan for the synthetic crude oil in terms of the deficiency in United States supply and under the anticipated trend in life index and having considered the consequences of an inaccurate assessment of the probabilities, the Board has asked itself whether, considering all factors, approval of the application at this time would be consistent with the broad intent of the Oil Sands Development Policy. The broad intent highlighted on page 11 of Section II of this report requires that oil sands production supplement but not displace conventional oil and, subject to that, that oil sands development should proceed as rapidly as it can be integrated into the economy of the Province. With respect to the synthetic crude oil, this means that either the oil be marketed in a "new within reach market" or that its production be considered desirable under the life index test.

As discussed in Section XII of OGCB Report 68-C the key to determining whether or not the markets are new is whether or not restrictions on the volume of Canadian oil entering the

United States market will continue. In October of 1968, in OGCB Report 68-C, the Board stated its judgment that restrictions would be removed if the United States deficiencies reached a certain level. In Part A of this section the Board concludes that the stated level of deficiencies will, in all probability, be reached by about 1977, but there remains the broader question of whether under to-day's circumstances the development of deficiencies of the stated level still will mean that restrictions on the import of Canadian oil to the United States will be removed. There are differences both in the figures generated and in the overall environment between October 1968, or March 1969 and now.

Comparing the present and the 1968 figures Part A of this section shows higher total United States deficiencies, growing more slowly and lower remaining import requirements also growing more slowly. Section VIII discusses some of the changes in the environment including the range of views affecting Canada being expressed to the United States Task Force on Oil Import Control.

The principal changes in the environment to-day as compared with that in the fall of 1968 and spring of 1969 are the greater efforts being made by both Canadian and United States authorities to enforce the terms of the intergovernmental agreement restricting exports of Canadian oil to the United States and the increased acceptance in both government and industry circles of the idea of integrated North American policies for the transportation and marketing of oil and gas.

As discussed in Section VIII the former development, while affecting current marketing, suggests nothing really new and merely confirms that while such restraints exist the markets suggested by the applicants could not represent net gains as required under the Oil Sands Development Policy.

The latter environmental change, however, does indicate a much broader recognition of the mutual benefits of the continental approach. The stands in favour of such an approach which have been taken by the governments of Alberta and Canada might have been expected, but the Board finds it significant that in their submissions to the United States Task Force on Oil Import Control, the staff of the State Department of the United States has expressed favour for a continental policy and the staff of the Interior Department has suggested special treatment for Canadian oil. Similarly, as discussed in Section VIII, an impressive list of United States oil companies have lent their support to a continental policy.

The Board recognizes that a continental oil policy does not necessarily mean removal of restriction on the movement of Canadian oil but it should enhance the prospects of Canadian oil serving the United States Midwest and generally operate in the direction of relaxation of control over the movement of Canadian oil. Also it is likely to improve the prospects of Western Canadian oil serving markets in Quebec through mutually agreed upon restrictions on North American dependence on overseas oil. Additionally, the recent recognition by the United

States of its own position with respect to gas supplies, the desirability of it being able to obtain additional supplies from Canada, and the interrelationship between Canada's supply of gas and its markets for oil, suggest that the United States will bear in mind its need for gas supplies in its consideration of the desirability of restricting imports of oil from Canada. The Board considers all of these new or strengthened attitudes in United States government and industry circles indicative of future relaxation and ultimate removal of import controls. They suggest a more favourable environment than the Board foresaw in October of 1968.

The Board has weighed the previously discussed matters; the arithmetical analyses of the deficiencies in United States supply; the life index predictions; the consequences upon the conventional industry other than the applicants should the Board with the approval of the Lieutenant Governor in Council grant the application and should events later prove the Board's appraisal of the probabilities inaccurate; and the changing environment. In summary the Board believes:

- (1) The analyses of the deficiencies in the United States supply anticipated in 1976-77 suggest that restraints on the import of Canadian oil to the United States will be eliminated by about 1977.
- (2) The projections of life indices for Alberta conventional crude oil suggest that synthetic

crude oil will be desirable to supplement conventional production by 1980 or 1981.

- (3) The consequences on the conventional producers other than the applicants should the Board, with the approval of the Lieutenant Governor in Council, grant the application and should events later prove the Board's appraisal of the probabilities inaccurate, could be significant in terms of cash flow for a period of three or four years when a deferment of two to three per cent of their market could result, but this could be partially offset through the provision of new markets by the applicants.

- (4) Changes in the overall environment suggest that the probabilities of a North American oil and gas policy with improved prospects for the marketing of Canadian oil are greater now than could have been assumed in October 1968.

Item (3) above provides a measure of the risk which would be taken if the application is now granted and considering what could happen under pessimistic assumptions. Looking, however, at the more probable situation as seen by the Board, that is, that controls would be removed by about 1977, the conventional producers would stand to benefit by the present worth gain resulting from the opportunity of serving a share of the matching "new within reach markets" in the period immediately following 1977. The Board believes the benefit under this more probable assumption would likely be greater in terms of present

worth than would be any net adverse effect as discussed under the pessimistic assumption.

The Board also has asked itself whether the benefits to the Province of a granting of the application at this time were such as to warrant the taking of some risk.

The Board believes there would be benefits to the economy of Alberta, arising from further commercial development of the oil sands. It believes that if the present application is not approved it may be several years before another application is made and further commercial development could be delayed well beyond 1976-77. Furthermore, any appraisal of the trend in the life index discussed in subsection B confirms that synthetic crude oil will be required to supplement conventional crude oil by 1980 or soon after and that new synthetic production will then be needed in amounts exceeding 100,000 barrels per day each year. This prospect underlines the importance of Alberta having the best possible technology ready and tested by 1980.

The Board believes the benefits to the Province are such as to warrant the taking of some risk.

The Board concludes that granting of the application would be consistent with the requirement placed upon the applicants relating to the level of the United States deficiencies; that changes in circumstances since October 1968 or March 1969 do not lessen the significance of the deficiency test but appear to favour relaxation of controls; that at worst, granting of the application at this time would have only a short term adverse

effect on the conventional producers which would probably be partially offset within a further like time; that the benefits to the Province of an approval of the application warrant the taking of some risk; and, overall, that approval of the application would be within the broad intent of the Oil Sands Development Policy.

IXA OVERALL APPRAISAL OF THE APPLICANTS'
MARKETING PLAN FOR THE SYNTHETIC
CRUDE OIL

(Minority view - Vernon Millard)

This section, like Section IX, contains an overall appraisal under the Oil Sands Development policy of the applicants' marketing plans for the 50,000 barrels per day of synthetic crude oil. The appraisal in this section is that of Board member, Vernon Millard, whose views on the subject are not in agreement with the majority views expressed in Section IX.

A. Qualification Under the "New Within Reach
Market" Criterion

In OGCB Report 68-C⁽¹⁾ the Board concluded that the applicants' plans for the marketing of the synthetic crude oil would have qualified under the "new within reach" market criterion if, on the balance of probabilities as they could best be assessed, the deficiencies in the United States supply were actually of the order estimated by the applicants in their 1968 application for the period 1973 to 1975.

The Board reached this conclusion because these deficiencies and the related remaining import requirements as calculated by the Board were sufficiently large that "the requirements of the United States for additional foreign supplies would be such that in all probability it would wish to draw increasingly upon Canadian supplies.....The Board concludes that under this

(1) Report on an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December 1968.

case restraints on the import of Canadian oil would have been removed.....within the period 1973-75". In the notice for the May 1969 hearing to consider the amended application reference was again made to the anticipated deficiencies and required the applicants to satisfy the Board that the balance of probabilities strongly favours the position that the deficiencies in the United States supply in the period 1976 to 1977 would be approximately what the applicants anticipated at the August 1968 hearing for the period 1973 to 1974.

The gross supply deficiencies as submitted by the applicants in 1968 were closely comparable to those estimated by the Board in OGCB Report 68-C. Therefore, in order to simplify the comparisons and discussion in this section reference will be made only to the Board estimates.

Table IXA-1 summarizes the Board's estimated supply deficiencies for the 1968 and the 1969 forecasts. Figure IX-1 (see page 77) portrays this data. Table IXA-2 provides a comparison of the two Board forecasts after displacing the 1969 forecast by three years. Thus, in this comparison 1976 of the 1969 forecast is compared to 1973 of the 1968 forecast. Figure IXA-1 presents the comparisons included in Table IXA-2.

TABLE IXA-1

A comparison of Deficiencies in United States Oil
Supply as Estimated by the Board in 1968 and 1969
(MBD)

<u>1968*</u> <u>Forecast</u>	<u>Gross</u> <u>Deficiency</u>	<u>U.S.</u> <u>Synthetic</u> <u>Oil</u> <u>Production</u>	<u>Overland</u> <u>Imports</u>	<u>Assumed</u> <u>Overseas</u> <u>Imports</u>	<u>Remaining</u> <u>Import</u> <u>Requirements</u>
1970	3065		543	2210	312
1971	3273		576	2269	428
1972	3478		608	2330	540
1973	3535		648	2390	497
1974	3693	50	690	2451	502
1975	3845	100	732	2520	493
1976	4171	180	775	2579	637
1977	4497	260	824	2646	767
1978	4823	340	878	2714	891
1979	5149	420	935	2781	1013
1980	5474	500	995	2850	1129
1969					
<u>Forecast</u>					
1970	2950		598	2208	144
1971	3150		640	2272	238
1972	3350		681	2336	333
1973	3250		669	2416	165
1974	3400		689	2496	215
1975	3550		729	2576	245
1976	3750		770	2656	324
1977	3950		817	2736	397
1978	4050		869	2816	365
1979	4350	50	925	2896	479
1980	4650	100	980	2992	578

* Low Alaska Production Case.

TABLE IXA-2

A Summary of the Difference Between the Board's
1969 Forecast (Displaced 3 Years) and the 1968
Forecast of Deficiencies in United States Oil
Supply

<u>Year</u>		(MBD)				Remaini Import Require ments
<u>1968</u> <u>Forecast</u>	<u>1969</u> <u>Forecast</u>	<u>Gross</u> <u>Deficiency</u>	<u>U.S.</u> <u>Synthetic</u> <u>Oil</u> <u>Production</u>	<u>Overland</u> <u>Imports</u>	<u>Assumed</u> <u>Overseas</u> <u>Imports</u>	
1970	1973	185		126	206	- 147
1971	1974	127		113	227	- 213
1972	1975	72		121	246	- 295
1973	1976	215		122	265	- 173
1974	1977	257	- 50	127	285	- 105
1975	1978	205	-100	137	296	- 128
1976	1979	179	-130	150	317	- 158
1977	1980	153	-160	156	346	- 189

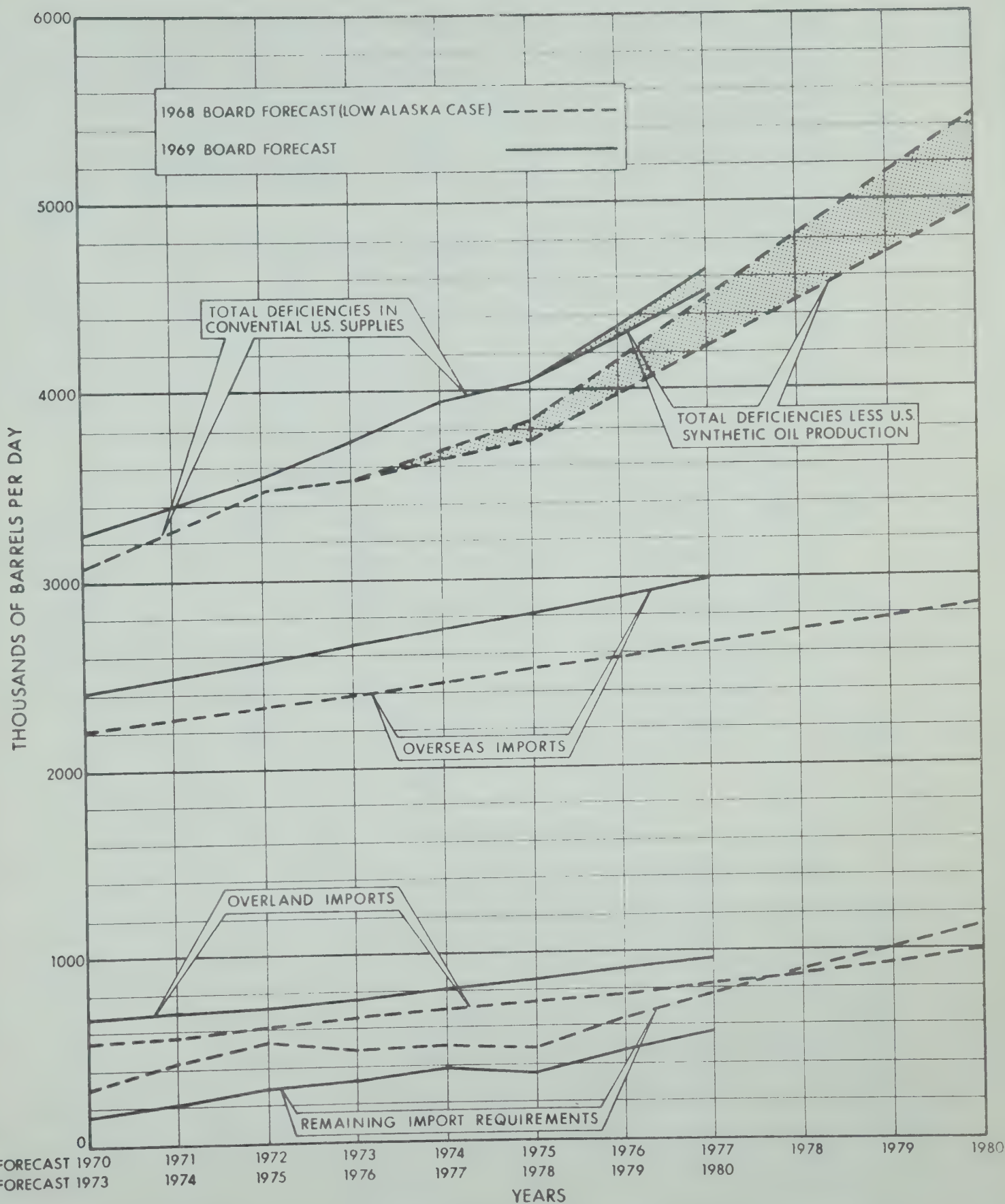


FIGURE IX A-1 COMPARISON OF 1968 AND 1969 FORECASTS OF DEFICIENCIES IN U.S. SUPPLY WITH THE 1969 FORECAST DISPLACED THREE YEARS

It will be noted from Table IXA-2 and Figure IXA-1 that United States supply deficiencies for the period 1973-1975 as forecast by the Board in 1968, compared with the estimated deficiencies as forecast in 1969 for the period 1976-78, indicate that

(a) the average annual gross deficiency is some 260 thousand barrels per day more than the 1968 estimate, whereas

(b) the average annual net deficiency, or as referred to in the Table the remaining import requirements is some 150,000 barrels a day less than the 1968 forecast.

Thus, having regard to the terms of reference for the May, 1969 hearing the gross deficiency comparison is favorable to the applicants' case, whereas the net deficiency or remaining import requirement comparison is unfavorable. In view of these apparently conflicting answers a careful assessment has been made of the relative importance of the gross deficiencies as compared to the remaining import requirements.

(1) Consideration of Gross Deficiencies

It will be recalled that the United States gross supply deficiency is the difference between demand and conventional oil production. This deficiency could be, and in the past, has been, met by imports from either overseas or overland. In future years a portion of the deficiency may be met by United States synthetic oil production. The remaining import requirements are obtained by subtracting certain assumed imports and estimated United States

production of synthetic crude oil where applicable, from the gross deficiency. It will be recalled that the estimated remaining import requirements were employed in OGCB Report 68-C as a means of testing whether the United States would need to amend its import policies and remove restraints on the importation of Canadian oil.

Table IXA-1 and Figure IX-1 indicate that the gross deficiencies as estimated in 1969 are somewhat lower than those forecast by the Board in 1968 under the low Alaska production case. Overseas imports are seen to be slightly higher in the 1969 estimate due to the higher forecast of United States oil demand. Overland imports are essentially the same in both forecasts.

The displacement of the 1969 forecast by three years, as depicted in Figure IXA-1, results in the gross deficiencies as estimated in 1969 becoming greater than those in the 1968 forecast. It is important to note, however, that the overseas and overland imports become greater in a similar manner. In fact reference to Table IXA-2 indicates that the increases in imports exceed those in the gross deficiencies. During the period 1973-75, in the 1968 forecast, as compared to 1976-78 in the 1969 forecast, the average annual gross deficiency is 225 thousand barrels per day higher in the 1969 forecast, whereas the average imports are some 400 thousand barrels per day higher.

Since both overseas and overland imports are essentially related to an increasing United States oil demand it is apparent that the estimated imports for a later year will exceed those of an earlier year. Thus, the gross deficiency must increase

or the remaining import requirements will decrease by virtue of the increasing United States imports.

As previously stated in OGCB Report 68-C the final assessment respecting the likelihood of the United States revising its policies and removing its restrictions on Canadian imports was made on the basis of remaining import requirements. It is true that these requirements were associated with certain assumed imports and gross deficiencies, but it is the relationship between these components which was fundamental to the assessment. Therefore, notwithstanding the views of my colleagues, it is my opinion that little significance should be attached to the absolute level of only the gross deficiency at one point of time as compared to another when attempting to assess the probabilities of the United States revising its policies. This comparison only becomes meaningful when consideration also is given to the change in estimated imports.

(2) Consideration of Remaining Import Requirements

As previously stated and as depicted in Figures IX-1 and IXA-1 the remaining import requirements for the 1969 forecast are less than those in the 1968 forecast, both in the normal year by year comparison and in a comparison in which the 1969 forecast is displaced by three years. The significance of these lower remaining import requirements has been assessed by considering

1. whether the Board likely would have recommended approval of the application in 1968 if the remaining import requirements were the same as those now

estimated for 1976 and 1977, and

2. whether the now estimated remaining import requirements for 1976 and 1977 are such as to favour strongly the contention that the United States would remove its restrictions on Canadian imports by that time.

1. Comparison of Remaining Import Requirements for 1973-75 and 1976-78. In 1968 the Board

estimated that the remaining import requirements would increase from some 300 thousand barrels per day in 1970 to 500 thousand barrels per day by 1975 and then increase rapidly to some 1.1 million barrels per day by 1980. As depicted on Figure IXA-1 the comparable numbers for the 1969 estimate after a three-year displacement would result in remaining import requirements of some 150 thousand barrels per day in 1970, increasing to about 400 thousand barrels per day by 1974, then levelling off through to 1975 and increasing fairly rapidly to some 600 thousand barrels per day by 1977.

The current estimate of remaining import requirements between 1973 and 1980 averages some 176 thousand barrels per day less than the earlier forecast of remaining import requirements between 1970 and 1977. It is apparent that the current estimates for 1976-77 provide less support than the 1968 estimates for

1973-74 for the contention that the United States import restrictions would be removed during the period 1973-75. It is difficult in retrospect to be certain as to the decision the Board would have made last year under these less favorable conditions. However, it is my view that the Board probably would have concluded that the level of remaining import requirements would not indicate removal of import controls by 1975 but rather removal by 1976 or 1977. Under these circumstances I believe that the Board would not have decided in favour of the applicants' scheme which involved commencing production in 1973-74.

2. Current Assessment of Estimated Remaining Import Requirements for 1976 and 1977. The Board now estimates that the United States remaining import requirements will range from about 250 thousand to 600 thousand barrels per day during 1975 to 1980. During 1976 and 1977 they are expected to be 320 thousand and 400 thousand barrels per day respectively. At this level they represent some 2 per cent of estimated United States oil demand and by 1980 slightly more than 3 per cent. At this upper level they probably represent a situation where the United States would become concerned particularly if the estimated remaining import requirements in the period 1980-85 appear to grow rapidly. Under these circumstances and as

expressed in OGCB Report 68-C, it would be reasonable to expect full removal of restraints on Canadian imports. This would suggest that under these conditions removal of restraints might occur in 1979 to 1980.

One must be concerned, however, with the reliability of the forecast for the later 1970's and in particular the forecast of Alaska production. As indicated in Section V, plans already announced and investigations underway with respect to the marketing of Alaska production suggest a forecast from this area during the 1975-80 period reasonably compatible with that adopted by the Board. Should exploration continue to be highly successful there is the distinct possibility of Alaska production exceeding the current Board forecast for 1980 by some 500 thousand to 1 million barrels per day. Even a relatively minor underestimate by the Board in its current forecast would reduce the remaining import requirements to a level which would not require the United States Government to change its import policies and remove all restraints on Canadian imports.

Thus in summary the Board's current estimates suggest to me that it would be reasonable to expect removal of restraints on Canadian imports by 1979 or 1980. These dates are two to three years later

than the first year of full production proposed by the applicants. Furthermore, in view of the rapidly changing exploration scene in Alaska there must be considerable uncertainty with respect to the validity of the Alaska production forecast for the late 1970's.

In conclusion, having regard for the currently estimated remaining import requirements in 1976-77 as compared to the previous estimates for 1973-74, and to my inability to conclude that the balance of probabilities strongly favours the removal of restraints on Canadian imports by 1976-77, I do not believe that the applicants' marketing plan for the synthetic crude oil meets the test of a "new within reach" market.

B. Qualification under the Other "Within Reach Market" Criterion, or the Life Index Criterion

The life index calculations presented in Section XII of OGCB Report 68-C have been reviewed and revised where necessary. The purpose of this review was to determine whether the application would qualify under the broader criterion applicable to any "within reach market", that is, when the life index of Alberta's conventional industry is projected to decline to certain levels. The review requires a reappraisal of the Board's forecasts of Alberta's reserves and demand for Alberta light and medium crude oil.

(1) Reserve Forecasts

In OGCB Report 68-C the Board presented a low, medium and

high projection of initial reserves of Alberta light and medium crude oil. The medium reserve forecast results in an average annual growth in initial reserves from 1968 to 1980 which is slightly higher than the historical long term growth rate. This now appears to be somewhat optimistic but the difference is not sufficient to warrant revision of the forecast.

(2) Demand Forecasts

In Section VIII of OGCB Report 68-C the Board also presented its forecast of the demand for Alberta light and medium crude oil. Since the publication of that report and in connection with an application by Chevron relating to gas cycling in the Kaybob South Field, the Board has made some minor revisions in its basic demand forecast. These were discussed and published in OGCB Decision 69-12. For purposes of the current life index calculations, the revised basic demand forecast has been extended from 1980 to 1985, on the assumption that opportunities for Canadian oil will be limited to existing market areas in Canada and the United States, and that there will be a gradual relaxation of existing United States import controls during the period. Under these market conditions, an extrapolation of the trend in production from other areas of Canada, including 'new' areas, and a projection of the trend in Alberta's production of heavy crude oil and pentanes plus indicated a growth in the demand for Alberta light and medium crude oil from a level of 1,300 thousand barrels per day in 1980 to some 2,000 thousand barrels per day in 1985.

In Section XII of OGCB Report 68-C the Board, in considering

the life indices, included a "high demand" case by increasing the basic demand forecast by 25 per cent. This case was presented to test the sensitivity of life indices to a variation in demand and in recognition of the possibility of removal or relaxation of restraints on Canadian exports to the United States. In the interim following the issuance of the 1968 report there have been several developments which have a significant bearing on the validity of the "high demand" forecast. Comments respecting these developments follow later in this section.

The Board has revised its life index calculations based upon the low and medium reserve estimates and its new basic and high demand estimates. The new figures appear in Table IX-3 on page 84.

These indices are virtually identical to those calculated in 1968 for 1975 and 1980. In its previous report the Board concluded that while it is "improbable that the applicants would qualify for 'other' within reach markets in the mid-1970's. The Board sees a possibility that the life index test would be applicable before 1980, particularly if additional requirements for foreign supplies in the United States induce a higher level of Canadian exports than that incorporated in the Board's forecast in Section VIII." Having regard for the terms of the Oil Sands Development Policy which refers to "relating the scale and timing of increments of oil sands production also to the life index..... allowing the life index to decline gradually from present levels

but ensuring that it does not drop below 12-13 years", the indices in Table IX-3 suggest approval of the application would be appropriate during 1978 to 1982 depending upon the particular case selected. Since the lower part of this range is very close to the year of full production proposed by the applicants it is necessary to carefully assess the probabilities of each case.

(3) Case I - Medium Reserves - Basic Demand

Comments have been made previously in this section to the effect that the medium reserve forecast may be somewhat optimistic.

The basic demand forecast provides for exports to the United States based on a general projection of the trends in the growing market for Canadian oil. It does not assume the removal of restraints on Canadian exports nor does it allow for any relaxation of restraints prior to 1980.

In 1968 the Board considered Case I to be the most probable but developments in recent months, particularly with respect to the development of a continental oil policy, suggest that in today's environment Case I may present a pessimistic outlook.

The life indices calculated for Case I suggest that approval of oil sands production could not occur before 1982.

(4) Case II - Low Reserves - Basic Demand

This case combines a conservative reserve forecast with a projection of demand which in today's environment is also conservative.

Case II indices suggest approval of oil sands production by 1981.

(5) Case III - Medium Reserves - High Demand

Comments have been made previously respecting the medium reserve forecast.

As indicated under the comments respecting Case I, justification for a high demand forecast must rest on developments since the 1968 Report. In Section VIII reference is made to the submissions to United States Task Force on Oil Import Controls. It is apparent that there is a growing body of opinion which supports the principle of a continental oil policy. The actual formulation of such a policy might lead to the complete removal of restraints on Canadian imports or to a relaxation of the restraints. In either event exports to the United States, and hence demand for Alberta oil, would be significantly greater than estimated in the basic demand forecast. Furthermore, in order to achieve a continental oil policy Canada may well find it necessary to restrict its imports of overseas oil. Such a development could also bring about an increase in the demand for Alberta oil.

Thus on the basis of these developments an arbitrary upward adjustment in demand by 25 per cent beyond 1975 not only seems reasonable but may be conservative. This represents an increase over the basic demand forecast of 230 thousand and 330 thousand barrels per day in 1975 and 1980 respectively.

As a final check, the high demand forecast has been compared to Chevron's estimates presented earlier this year and reported in OGCB Decision 69-12. It is of interest to

note that Chevron's current estimates of exports to the United States are greater than they presented at the 1968 hearing by some 100 thousand and 250 thousand barrels per day for 1975 and 1980 respectively. It is also significant that Chevron's current estimate of the demand for Alberta oil is the same as the Board's high demand in 1975 and some 300 thousand barrels per day greater than the Board's high demand for 1980.

From the above comments I conclude that Case III represents a realistic probability and even may be pessimistic. Under Case III it would be appropriate under the life index test to approve further oil sands production for 1979.

(6) Case IV - Low Reserves - High Demand

In OGCB Report 68-C the Board dismissed Case IV as being an improbable combination. In view of the previous comments on the probability of the high demand forecast, Case IV appears questionable only in terms of its conservative reserve forecast. Thus this case presents the reverse combination of Case I. Under this case approval for further oil sands production could be granted for 1978.

In summary, after assessing the validity of the assumptions embodied in the four cases it is concluded that today Case III represents the most probable combination of reserve and demand forecasts. Cases I and IV provide an indication of the range - the former demonstrating the effect of a lower demand forecast and the latter the effect of a lower reserve forecast.

As stated previously Case III would permit under the life index test approval of further oil sands production for 1979.

This date is two years later than the first year of full production proposed by the applicants. The application therefore, falls somewhat short of meeting the test of an other "within reach market".

C. Qualification under the Broad Intent of the Oil Sands Development Policy

As discussed in subsection A and B, the application does not in my opinion fully meet the arithmetical criterion developed by the Board in interpreting the Oil Sands Development Policy. Nevertheless, it remains necessary to consider whether the application does satisfy the broad intent of the policy and therefore should be approved.

It will be recalled that the 1962 policy states that "the Government will.....so regulate oil sands production that it will supplement but not displace conventional oil. At the same time, an opportunity will be provided for the orderly development of the oil sands within the limits dictated by the Government's responsibility to the public interest in preserving the stability of conventional oil development and the necessary incentive to ensure its continued growth".

The essential question is whether the application should be approved for full scale production in 1977 having in mind my belief that the probabilities do not strongly favour the complete removal of restraints on Canadian exports to the United States by that date and that the proposed date is some two years in advance of the time when approval could be granted under the

life index test.

It will be recalled that in Table IX-3 the life indices for each of the four cases are projected to decline rapidly in the late 1970's. The indices for Case III which are plotted in Figure IXA-2 decrease from 20 years in 1975 to 13 years in 1980 and to 6 years in 1985. The injection of increments of 50 thousand, 100 thousand and an additional 100 thousand barrels per day of oil sands production in 1979, 1980 and 1981 respectively retard the decrease but do not eliminate the downward trend. This suggests that by around 1980 continued ability to satisfy the growing demand for Alberta oil will be dependent on the rapid expansion of oil sands production.

This general situation also can be observed by examining Figure IXA-3. In this chart the productive capacity of the conventional industry is related to the total demand for Alberta light and medium crude oil. The productive capacity was calculated by adopting a life index of 12.5 years. Such an index would allow for sufficient capacity to accommodate fluctuation in market demand and would also recognize that older fields may not be developed up to their full MER level because of economic considerations. The demand projection in Figure IXA-3 is the high demand forecast.

The demand and productive capacity projections indicate that shortly after 1980 the conventional industry would not be able to satisfy total requirements. Having regard for the intent of the Oil Sands Development Policy it has been assumed that oil sands production would supplement the conventional

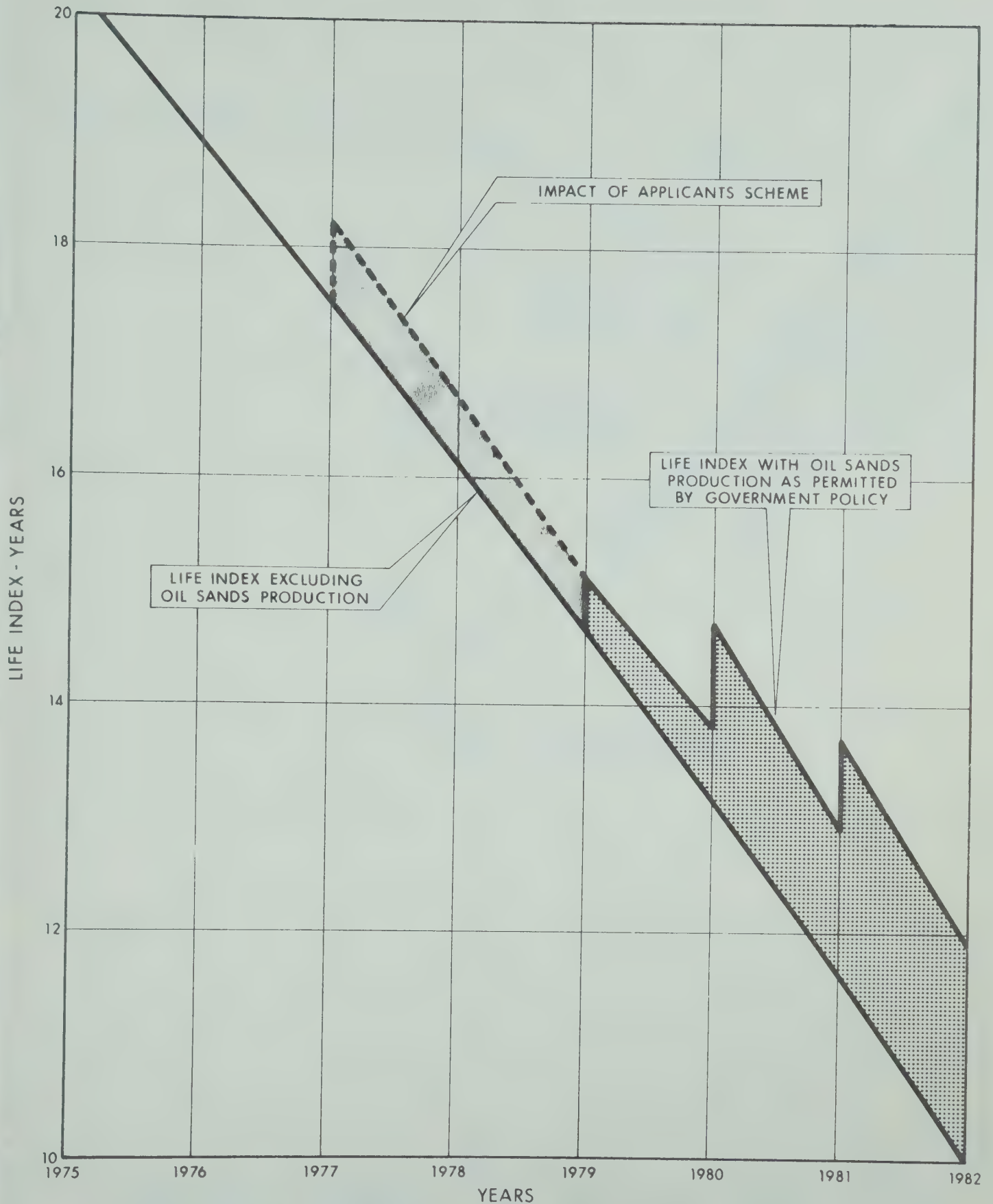


FIGURE IX A-2 LIFE INDEX OF ALBERTA LIGHT AND MEDIUM
CRUDE OIL RESERVES

CASE III — MEDIUM RESERVE FORECAST - HIGH DEMAND FORECAST

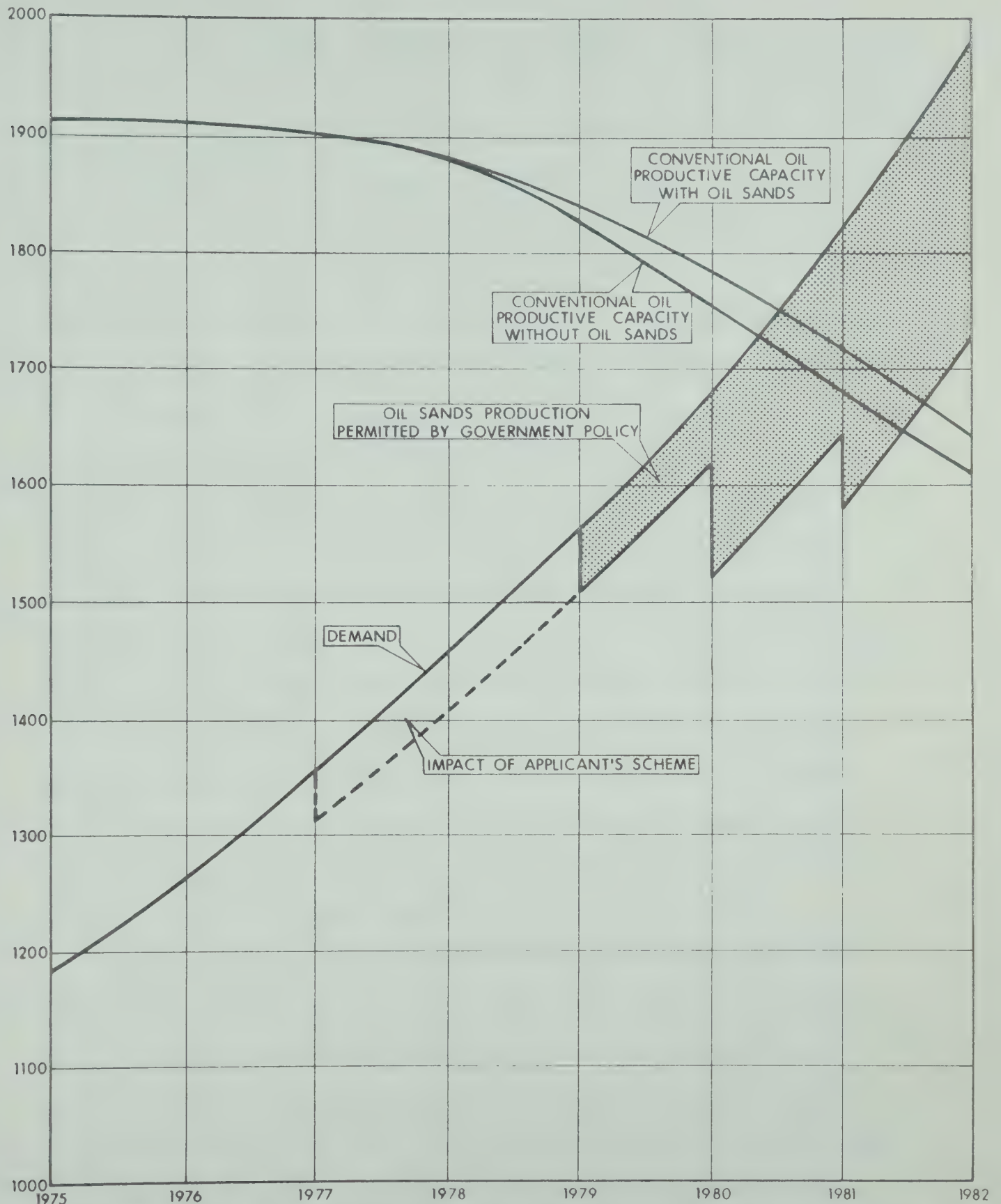


FIGURE IX A-3 COMPARISON OF THE PRODUCTIVE CAPACITY OF THE CONVENTIONAL INDUSTRY AND THE DEMAND FOR ALBERTA LIGHT AND MEDIUM CRUDE OIL

CASE III - MEDIUM RESERVES FORECAST
HIGH DEMAND FORECAST

industry. Accordingly, commencing in 1979 oil sands production is assumed to supply an increasing portion of the total market. Oil sands production would increase from 50 thousand barrels per day in 1979 to 250 thousand barrels per day by 1981. The injection of these volumes of synthetic crude oil enables the industry to meet total requirements and assists in maintaining the productive capacity of the conventional industry.

Figure IXA-3 also demonstrates the conventional industry's improving position with respect to unutilized productive capacity. For example the unutilized potential productive capacity (that is, the difference between productive capacity and demand) decreases from some 700 thousand barrels per day in 1975 to less than 300 thousand barrels per day in 1979. If the conventional industry's productive capacity and life index are going to be maintained above certain minimum levels then it must follow that some degree of deferment of production must occur and some spare potential capacity must exist. Figure IXA-3 indicates that in 1979 a spare productive capacity of some 300 thousand barrels per day would be reasonable under the Oil Sands Development Policy.

Thus an examination of future trends in both demand for Alberta oil and conventional oil reserves indicates that shortly before 1980 it is possible to satisfy the projected growth in demand only by placing increasing reliance on oil sands production. By this time the conventional industry will be producing near its productive capacity. It is in this

environment that one must consider whether or not approval of the current application is consistent with the broad terms of the policy, and whether there is justification for approving full scale operations for 1977 as compared to 1979 as indicated by the life index test.

First of all it must be recognized that advancing the date at which oil sands production enters the market would likely have an immediate unfavorable effect on the conventional industry. (If it were not for the possibility that import restrictions on Canadian oil might be completely removed by that time there would not be any need to qualify this statement). In spite of this unfavorable impact the conventional industry during the 1977-79 period is rapidly approaching the point at which it requires oil sands production to protect its market growth. Even after allowing for the displacement of 50 thousand barrels per day by oil sands production two years in advance of the time required, the continual and rapid increase in demand would ensure "preserving the stability of conventional oil development and the necessary incentive to ensure its continued growth" as required under the 1962 policy.

From the viewpoint of the industry as a whole and the future of the Province there are significant advantages in permitting additional oil sands to enter the market a year or two in advance of the time that they are fully required.

1. Approval provides more "lead time" for the perfecting of oil sands technology which will be of vital

importance to the Alberta industry during the 1980's.

2. The increased availability of oil sands production in 1977 would further improve the Alberta reserve base for market growth and would provide confirmation of the reliability of this source for the 1980's.
3. Granting of the application would provide for further oil sands development - this is not to say that such further development would not at a later date occur in any event but it does provide a safety factor for the Province.

In summary the above analysis indicates that, while the applicants have not in my view met the arithmetical criterion of the Oil Sands Development Policy, approval of the application is not inconsistent with the broad intent of the policy. The analysis further demonstrates that the Alberta industry will need to place increasing reliance on oil sands production beginning shortly before 1980 if it expects to achieve the potential market growth. The analysis also points out certain advantages that may be gained by advancing the date of full production by a year or two. Having regard for all of these factors approval of the application appears reasonable and desirable.

D. Implications to the Conventional Producers if the Board's Appraisal of the Probabilities Should Prove to be Inaccurate

In Section IX, subsection C my colleagues consider the implications to the conventional producers if the Board's appraisal of the probabilities should prove to be inaccurate. Their concern relates to the possibility that restraints on Canadian exports to the United States may not be removed. Inasmuch as I have not assumed removal of restraints this factor does not affect my analysis. However, I am concerned about the possibility that the high demand forecast assumed in Case III may not be realized. In this event the impact on the conventional producer would extend for a further two year period.

I agree with my colleagues' assessment of the probable impact on the conventional producers of a three to four year deferment in production. Furthermore, I concur that the benefits to the Province are such as to warrant the taking of some risk.

X FINDINGS

Although Sections IX and IXA reflect some difference of views among the Board members with regard to the aspects of the matters discussed therein, this difference does not affect the decision of the Board, and the Findings in this Section are unanimous.

As stated in Section II certain of the Board's Findings concerning the 1968 application and reported in OGCB Report 68-C⁽¹⁾ apply unchanged to the present application. This section, in addition to setting out the Board's Findings made upon the subject application, repeats the unchanged Findings for convenience.

The Board having publicly heard the application under Part VIA of The Oil and Gas Conservation Act, of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited and having studied the evidence submitted by the applicants and the interveners at the public hearing, and having regard to the advice of its staff and to its own knowledge, finds as follows:

1. IN THE MATTER OF CONSERVATION AND RELATED ASPECTS

The present proposal of the applicants is for a sequence of mining, separating and upgrading operations which, subject to a condition pertaining to the initial tailings disposal operations, would result in satisfactory conservation and recovery of products from oil sands.

The applicants' plans for the disposal of liquid and gaseous

(1) Report of an Application of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited under Part VIA of The Oil and Gas Conservation Act. December 1968.

wastes are satisfactory to the Board, subject only to the approval of the Department of Health of final design details.

Details concerning these matters and the nature of the condition proposed may be found in Section VII of OGCB Report 68-C.

2. IN THE MATTER OF TECHNICAL FEASIBILITY

The present proposal of the applicants involves certain technical changes from their proposal of 1963. The Board believes that significant improvements have been made in each major process step and finds that there are no technical feasibility considerations that should stand in the way of the approval of the project.

Details of the processes and technical improvements proposed by the applicants are presented in Section II of OGCB Report 68-C, and the overall views of the applicants and the Board on these matters are presented in Section VII of OGCB Report 68-C.

3. IN THE MATTERS OF ECONOMIC FEASIBILITY AND FINANCIBILITY

While the Board does not consider it to be its responsibility to rule in any absolute sense on the economic feasibility of the proposed project, it considers the limited economic data submitted by the applicants at the 1968 hearing, together with their preparedness to proceed with the project, sufficient evidence that economic feasibility considerations should not stand in the way of approval of the project. The Board is satisfied that the three-year delay in start up time proposed

in the present application would not significantly affect the economics of the scheme.

The Board is satisfied with the applicants' ability to finance the proposed operation.

These matters are elaborated upon in Section VII of OGCB Report 68-C and Section VI of this report.

4. IN THE MATTER OF THE MARKETING PLAN

(a) The Proposed "New Within Reach" Markets

The market plans proposed by Atlantic Richfield, Cities Service and Imperial for their shares of the synthetic crude oil and the matching conventional crude oil, are by no means fully defined and rest primarily upon general commitments made by the proposed United States purchasers. In the case of Royalite, the plan to sell its share of the synthetic and matching conventional crude oil to Gulf Oil Corporation for use in its Toledo refinery, is more specific but still dependent upon general commitments from the purchaser. However, recognizing the difficulties involved the Board is satisfied with the undertakings of the applicants, and that the markets would be ones not being served today and ones over and above normal market growth for Alberta oil in such market areas.

As discussed in Section XII of OGCB Report 68-C, whether the proposed markets would also qualify as representing net increases in markets for Canadian oil depends upon the removal of Government restrictions on the import of Canadian oil into the United States. On the evidence supplied by the applicants

in connection with the 1969 amendment of the application, as discussed in detail in Section IX of this report, the Board (majority view of Chairman G. W. Govier and Deputy Chairman A. F. Manyluk) is satisfied that the probabilities favour the removal of government controls on the export of Canadian oil to the United States by about 1977 and therefore that the markets proposed for the synthetic crude oil by the applicants meet the "net increase" requirement of the Oil Sands Development Policy. Board Member Vernon Millard, expressing his minority view, does not agree that the markets would meet the net increase requirement of the policy but finds the plan appropriate having regard to the declining life index of the conventional industry, and the expected need for substantial oil sands products to supplement conventional oil products around 1980. Furthermore, following its exploration of the consequences should the probabilities as it now sees them not be fully realized, the full Board is satisfied that the risk is modest compared with the overall benefit to the Province. The full Board is also satisfied that the marketing plans for the synthetic crude oil is within the broad intent of the Oil Sands Development Policy

(b) The Proposed Specialty Markets

The Board is satisfied that the specialty fuel oil markets proposed by the applicants are ones not now being served, and not likely in the foreseeable future to be served, by Alberta conventional crude oil. Accordingly, the Board finds

that the applicants' plan for the marketing of 25,000 barrels per day of specialty fuel oils conforms with the "beyond reach" criterion of the Oil Sands Development Policy. Should the applicants find it necessary or desirable to blend the proposed 5,000 barrels per day of naphtha production with the synthetic crude oil and produce and market 30,000 barrels per day of specialty fuel oils, rather than the 25,000 barrels per day, the Board agrees that this greater volume of fuel oil could also be marketed in conformity with the Policy.

(c) The Naphtha Market

The applicants' plans for the marketing of 5,000 barrels per day of naphtha in overseas or other geographically beyond reach markets, if realized, would conform with the "beyond reach" criterion of the Oil Sands Development Policy. If these plans were not realized and the naphtha were blended with synthetic crude oil and 5,000 barrels of additional specialty fuel oil were produced instead, the Board agrees, as discussed in paragraph (b) above that this plan would also be in conformity with the Policy.

Full details of the applicants' marketing plans, the interveners' views of them and the Board's analysis of these matters are given in Sections XII, VIII, IX, X and XI of OGCB Report 68-C and in Sections VII, VIII, IX and IXA of this report.

5. IN THE MATTER OF SURVEILLANCE

Inasmuch as the granting of an approval would depend on the Board's having found that the marketing plans of the

applicants are in accordance with the Oil Sands Development Policy, the applicants should be required to demonstrate in the future that they have adhered to such plans. Accordingly, any approval that may be issued should include a provision requiring the applicants to file with the Board full, definitive details of their markets before production is started and a provision requiring the applicants to report annually on the disposition of products produced in the preceding year.

In view of the extended period before the commencement of the operation of the scheme contemplated by the present applications, the applicants should report annually to the Board on the progress of the work scheduled by the applicants to be performed prior to the major construction.

The views of the applicants, the interveners and the Board on the matters referred to in the first paragraph of this Finding are discussed in Section XIII of OGCB Report 68-C.

6. DISPOSITION OF THE APPLICATION

Having regard to its present findings as reported in Findings 1 to 5 of this section and its responsibility under The Oil and Gas Conservation Act, 1969, and the Oil Sands Development Policy of the Government of Alberta, the Board is prepared, with the approval of the Lieutenant Governor in Council, to grant the application and to issue an approval

to the applicants in the form reproduced in Appendix A and
subject to the terms and conditions therein shown.

Respectfully submitted,

G. W. Govier, P. Eng.
Chairman

A. F. Manyluk, P. Eng.
Deputy Chairman

Vernon Millard
Board Member

Dated at Calgary, Alberta
this 11th day of September,
A. D. 1969

APPENDIX A

PROVINCE OF ALBERTA
THE OIL AND GAS CONSERVATION ACT, 1969
OIL AND GAS CONSERVATION BOARD

IN THE MATTER of a scheme of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited for the recovery of oil sands, crude bitumen or products derived therefrom.

APPROVAL NO.

The Oil and Gas Conservation Board, pursuant to The Oil and Gas Conservation Act, 1969, being chapter 83 of the Statutes of Alberta, 1969, and with the approval of the Lieutenant Governor in Council numbered O.C. and dated

hereby orders as follows:

1. (1) The scheme of Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited proposed to be developed and operated on their behalf by Syncrude Canada Ltd. (which five companies are hereinafter collectively called "Syncrude"), for the recovery of oil sands, crude bitumen or products derived therefrom, taken from the area shown outlined on the attachment hereto, marked Appendix A to this approval, as such scheme is described in an application dated May 9, 1962 as amended to May 3, 1968 and as further amended to March 24, 1969, together with supporting material marked as exhibits and evidence adduced at the hearings of the application and amendments thereof, is approved, subject to the terms and conditions herein contained.

(2) Subclause (1) does not preclude alterations in design or equipment compatible with the outlines of the scheme and made for the better operation of the scheme.

2. This approval applies to the recovery in each calendar year of 18,250,000 barrels of synthetic crude oil, 9,125,000 barrels of specialty oils and 1,825,000 barrels of naphtha, but for the period consisting of the part of the year following the date, as established by the Board, of commencement of essentially full-scale operations, and the next succeeding calendar year, the above volumes shall be increased by application of the factor equivalent to the number of days in the period divided by 365.

3. Prior to the commencement of major construction of the project facilities, Syncrude shall

(a) satisfy the Board that it would be economically feasible to remove and satisfactorily dispose of the tailings and overburden from the initial tailings disposal area described in the application, in order that satisfactory recovery of the oil sands reserves of the area would ultimately be possible, or

(b) propose alternative or modified initial tailings disposal arrangements satisfactory to the Board such that the impairment of recovery of oil sands reserves would be minimized.

4. Prior to the commencement of major construction Syncrude shall, in the month of December of each year, through a brief report of the progress of its experimental, pilot plant and engineering design work, satisfy the Board that it is proceeding generally in accordance with the schedule submitted to the Board at the May 1969 hearing of the application.

5. Syncrude shall satisfy the Board, prior to June 1, 1974, that construction of the facilities required for the scheme has commenced, unless upon application by Syncrude a later date is stipulated by the Board.

6. During construction of the proposed facilities Syncrude shall inform the Board on a quarterly basis of the progress of construction and shall obtain the approval of the Board concerning any major changes in design.

7. Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited shall, as soon as may be and before commencement of operations for the recovery of oil sands, crude bitumen or products derived therefrom, file with the Board full definitive details, in conformity with the general marketing plans described in the application and at the hearings, and satisfactory to the Board, of the markets in which the synthetic crude oil, specialty oils and naphtha will be sold, including the refineries to which any such products will be delivered.

8. Upon completion of the construction of the facilities and prior to June 1, 1976, or such later date as the Board may

stipulate, Syncrude shall file such details of the project design or operating procedures as the Board may require.

9. The effective commencement of the recovery of saleable hydrocarbon products shall be not earlier than July 1, 1976, and not later than January 1, 1977, unless upon application by Syncrude later dates are stipulated by the Board.

10. (1) When so required by the Board by notice of at least nine months, Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited shall satisfy the Board that they have made available to the producers of conventional crude oil and condensate in Alberta a market, not previously available to Alberta producers and consistent with the undertakings of the applicants individually and collectively, averaging over the first fractional and the subsequent full calendar year, and thereafter in each full calendar year, 50,000 barrels per day.

(2) After a requirement under subclause (1) has become effective and until otherwise directed by the Board, Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited shall, within three months of the end of each calendar year, file with the Board a detailed report of the markets that they have provided or obtained during the calendar year for producers of conventional crude oil and condensate in Alberta in accordance with the marketing plans described in the application.

11. Syncrude shall measure materials mined and processed, intermediate and final products recovered and other plant streams as necessary, so that material balance and recovery calculations for the extraction, upgrading and related processes may be made with reasonable accuracy and frequency.

12. Syncrude shall furnish to the Board, in such detail and at such times as may be set by the Board, monthly reports of the quantity and assay of oil sands mined and the quantity of all intermediate and final products recovered therefrom.

13. After the commencement of mining operations, Syncrude shall report in the first three years on a semi-annual basis, and thereafter as required by the Board, the percentage of the crude bitumen in place in the mined area recovered during the report period, and details of the proposed mining and overburden removal plans for the succeeding period.

14. Atlantic Richfield Company, Cities Service Athabasca, Inc., Imperial Oil Limited and Royalite Oil Company, Limited shall file with the Board on or before March 31 in each year commencing with the year, 1977, a detailed report satisfactory to the Board on the marketing of the synthetic crude oil, specialty oils and naphtha produced during the preceding year, in conformity with the general marketing plans described in the application and at the hearings, including the refineries to which any such products were delivered.

15. There shall be no flaring or waste of liquid hydrocarbons produced except in cases of emergency, unless authorized in writing by the Board.

16. Syncrude shall carry out its operations to the satisfaction of the Board and in a manner that

- (a) does not preclude or render more difficult the recovery of other oil sands recoverable by practical and reasonable operations,
- (b) results in the mining of the practical maximum of all oil sands within the area being mined,
- (c) results in the processing for the recovery of crude bitumen of the practical maximum of all oil sands mined,
- (d) results in the recovery of the practical maximum of crude bitumen from the oil sands mined, and
- (e) results in the recovery from the crude bitumen of the practical maximum of marketable products.

17. Syncrude shall carry out the solids disposal operations to the satisfaction of the Board, on lands to be approved by the Board, and in a manner that insures the stability of any tailings piles.

18. Syncrude shall dispose of any liquid wastes in a manner satisfactory to the Department of Health and the Board and in a manner that insures that no oily or contaminative materials flow over the land or into any body of water.

19. Syncrude shall convert any gaseous sulphur compounds, not converted to elemental sulphur, to sulphur dioxide and shall discharge them from stacks satisfactory to the Department of Health and to the Board.

20. Syncrude, in operations pursuant to the scheme, shall comply with the provisions of any applicable Act or regulation of the Province of Alberta now enacted or made, or that at any time hereafter may be enacted or made.

21. Where it appears to the Board that there has been a failure to comply with any terms or conditions of the approval, the Board may, in addition to any other remedy or proceeding to which it may resort, require the suspension of any operation carried on pursuant to the scheme.

22. This approval expires on December 31, 2001, unless the term of the approval is extended following a public hearing.

MADE at the City of Calgary, in the Province of Alberta,
this day of , A.D.

OIL AND GAS CONSERVATION BOARD

G. W. Govier
Chairman

APPENDIX A TO APPROVAL NO. _____

(This appendix, to be included at the time of issuance of the approval, would consist of a map of the lands leased by the applicants and for which approval is given for the mining of oil sands.)

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